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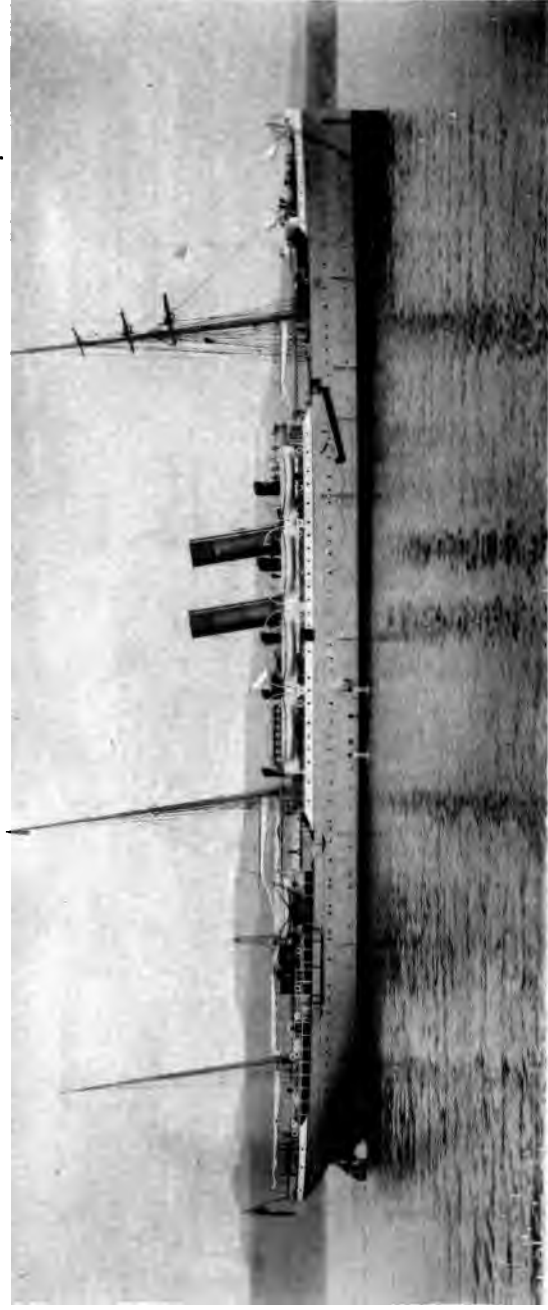
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I.—INTRODUCTION.

THE information in the following pages has been collected and republished in a convenient form on the occasion of the assembling in London of the International Congress of Hygiene and Demography of 1891, whom the Managers of the Castle Mail Packets Company are to have the honour of receiving to luncheon on board the South African Royal Mail Steamer "Drummond Castle." It is hoped that the valuable facts and opinions given by the medical authorities, who are here quoted, will be of interest not only to the Congress but to the public generally.

The benefits to invalids from a visit to South Africa are naturally derived either from the voyage there and back, or from their sojourn in the country.

In respect to residence in South Africa, we give below the reports of local physicians as contained in the Official Handbook of the Cape of Good Hope (Cape Town, 1886), edited by Mr. John Noble, Clerk of the House of Assembly. These deal with the Cape Colony.

They are followed by a lecture delivered in November, 1888, by Dr. E. SYMES THOMPSON before the Royal Colonial Institute and reprinted by permission from their Proceedings.

Dr. SYMES THOMPSON has kindly furnished a few foot notes to the lecture.

As regards the beneficial effects of the voyage, we give in Chapter V. the experience of well-known physicians.

Chapter V. contains also particulars of the means of communication by the Castle Mail Packets Company's steamers, and directions for passengers. Lastly, in Chapter VI., is a brief account of the South African Railway system.

LONDON, 14th August, 1891.

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*From the Official Handbook of the Cape of Good Hope, 1886, edited
by JOHN NOBLE, Esq., Clerk of the House of Assembly, Cape Town.
(Reprinted by Permission.)*

III.—THE CAPE AS A HEALTH RESORT.

(1) THE CAPE PENINSULA.

BY C. LAWRENCE HERMAN, M.B., M.C., M.R.C.S.

Though the Cape climate has already for a long time enjoyed a reputation for its salubrity, and many travellers have been warm in their praises of its health-giving properties, it is incomprehensible that so little is known in Europe of its advantages as a resort for invalids, "even by our best physicians."*

The South African Medical Association, with a view to placing on record some definite and reliable information on the subject, appointed a committee, with the sanction of the Colonial Government, to collect and collate information dealing with this important subject. Circulars were sent to medical men all over the Colony asking for assistance, and a large number of replies were elicited, containing most valuable information.

The space allotted in the Handbook to this subject unfortunately renders it impossible to do more than give a few extracts from some of these replies. It will be sufficient, however, to say that they were of a uniformly favourable character, and establish incontestably the beneficial effects of this climate on invalids suffering from chest affections.

The appended reports, necessarily very brief, written by gentlemen who have a practical knowledge of the districts they describe, and using the information obtained in reply to the

* Dr. Harry Leach, Notes on South Africa for Invalids.

committee's circular, may serve as a guide to the most important areas into which, for purposes of description, it has been found necessary to divide the Colony.

It must be remembered that over so extensive an area, presenting such varied physical features, high mountains, low-lying valleys, elevated table lands interspersed by patches of desert here and there, the climate must needs vary very considerably in different parts, and it is necessary, therefore, carefully to examine the meteorological circumstances of each area before recommending invalids to take up their residence in any particular locality.

The seasons here are not so well marked as in Europe. Spring merges into summer, and there is little change between autumn and winter. Christmas time sees us at the Cape in nearly midsummer. Spring is a most delightful season, when glad nature rejoices, and the earth is covered with the greenest verdure, crop after crop of the most beautiful flowers succeed each other, covering the veldt on every side, as far as the eye can reach, with a red, white, or yellow carpet.

The heat is nowhere excessive, and, though the direct rays of the sun, particularly in summer, may be very great, yet the peculiar dryness and rarefaction of the atmosphere render it easily bearable. In some of the deep-lying valleys where the motionless air becomes heated by the large mountain masses, the heat is in summer oppressive, but the actual heat is at no time excessive. Taking, as an example Kimberley, notably one of the warmest places in the Colony, we find the absolute maximum temperature during 1882 :—

For January	... 105·5	For July	... 75·6
February	... 101·3	August	... 85·0
March	... 94·2	September	... 92·7
April	... 91·5	October	... 96·0
May	... 79·1	November	... 97·5
June	... 75·0	December	... 101·0

Yet there is no place in the Colony whose people have more ceaseless activity, or more restless energy. Europeans work here all day, heedless of the heat. The day is characterized by a maximum of sunlight, a balmy, buoyant atmosphere, with a clear, cloudless sky of the purest blue, and a cool night succeeds a warm day.

In former years, before the opening of the Suez Canal, the Cape was the favoured resort for invalids from India. It was the winter season that evoked their enthusiasm. Dr. Stovell, *writing in the Bombay Medical Journal*, says : "No climate in the world could be more agreeable to the feelings—and very

few more beneficial for the usual class of Indian invalids than a Cape winter. There is an invigorating freshness about this season equally delightful and beneficial; the moment the rain ceases, the clouds rapidly clear away, and the sky remains bright for several days."

The total mean annual temperature is 61·26 F. in the shade, a remarkable approach to the mean summer temperature of England, 62°; and when to this fact is added the peculiar characteristics of the Cape climate, the excessive dryness, clearness, and rarefaction of the atmosphere, with a maximum of sunlight, a series of conditions of an almost typical character are met with for the treatment of pulmonary affections.

The peculiar dryness of our climate, while it gives it such valuable properties for invalids suffering from pulmonary disease, is, as Dr. W. H. Ross remarks, "the cause at once of all our woes and our wants. The periodical and long-continued droughts have made all agricultural speculations a mere matter of reliance on St. Swithin; while the gradual denudation of the soil by bush-fires, and careless cutting down of trees, has intensified the action of the sun and the desert winds. The greater part of our colonial land is glazed with baked clay, from which the water runs off as fast as it falls. There is nothing to retain moisture and allow of slow filtration, and except in the neighbourhood of the Knysna and George forests, and the few miles of territory that are moderately well wooded, there is really no certainty as to water supply."

Such being the broad characteristics of the Cape climate, it is easy to see what class of patients will be most benefited by a sojourn here. The rainy seasons vary in different parts, so that the invalid need find no difficulty in travelling from place to place to avoid the wet. In the most advanced cases, it would be best to winter on the plains and pass the summer in the cooler and more elevated mountain lands of the interior; but in less marked conditions the coast need not be left, as the late Dr. Harry Leach (Medical Officer for the port of London) remarks in his "Notes on South Africa for Invalids":—

"I can safely say that even the air of Wynberg on the one side, and of Green and Sea Points on the other side of Cape Town, are very good atmospheres for invalids, and indeed far better than can be found at most times of the year at any so-called Sanitaria in the United Kingdom or the Continent of Europe. Even for the invalid who does not care, or is not able, to go beyond the precincts of Cape Town, a residence in the Wynberg district during the summer (Cape summer) and at Sea Point during the winter months, will avoid the disagreeable circumstances that obtain on both sides of the capital at certain seasons of the year."

The prevalent diseases are those of Europe; epidemic disease is rare. There is no ague, or yellow fever, nor has cholera

ever visited our shores, and hydrophobia is unknown. Cases of chronic lung disease are infrequently met with among the European population, and acute lung disease is not attended with so much danger as in Europe; even infants a few weeks old recover from severe attacks of bronchitis which would invariably have proved fatal in Europe. The fevers are of a mild type, and are seldom followed by sequelæ. Diseases of a parasitic nature are rare, and Hydatids are infrequent. Rheumatisms and neuralgiæ are common, due to some extent, doubtless, to the large amount of meat consumed, and perhaps also to a diluted malarial influence.

Whilst all pulmonary affections are benefited by a residence in this climate, it cannot be too earnestly recommended that cases sent out here should be carefully picked; frequently invalids suffering from pulmonary phthisis arrive here in the last stages of their complaint, and are landed only to die. To derive any real benefit they must arrive early, and to effect any lasting amelioration in their condition it is advisable for them to take up residence here for a considerable period; in fact, they must be encouraged to make this country their home.

Sufferers from bronchial and asthmatic affections derive great benefit here. Where there is any marked hereditary phthisical tendency, a residence is most strongly to be recommended, particularly in the case of children. In other conditions of debilitating and wasting disease, much benefit will be derived from travelling in our equable climate; and a convalescence from a serious illness can be most profitably spent by voyaging to the Cape, spending a short time here, and then returning.

The voyage to the Cape has justly become famed as one of the most pleasant and enjoyable it is possible to make, and the great ocean steamers of the Cape lines have become celebrated for their comfort and punctuality. Provided with every necessary and every comfort, each carrying a surgeon, they touch, either outward or homeward, at Lisbon, Madeira, St. Helena, and sometimes Ascension, and accomplish the voyage to Cape Town in somewhat less than three weeks.

Cape Town is the most convenient place for the invalid to land at; it is provided with the best means of communication with the interior. "In all the world," says Mr. Froude in his *Oceana*, "there is no place so beautifully situated." The sanitary condition of the town itself is unfortunately not over good, though vastly improved in the last year or two. Hotels and private boarding-houses are numerous, and everything obtainable in the European towns can be got here. It is *advisable, however*, for the invalid suffering from distinct *nary disease not to tarry too long in Cape Town, but to*

select a locality to proceed up-country, and by rail in six, twelve, twenty-four or thirty-six hours he can comfortably, in a Pullman car, be transported hundreds of miles at very small expense and without any discomfort.

The cost of living fluctuates very much and differs considerably in different localities, but on the whole it is not more expensive than in England. Luxuries are dear, and servants bad, but the ordinary necessities of life are cheap and plentiful. In the western parts of the Colony, fruit is very plentiful. House rent is generally high, and the accommodation as a rule is not perfect. The hotels and boarding-houses are open to improvement, particularly up-country. A great stride would be made if a good sanitarium for invalids was established on European principles.

(2) GRAHAM'S TOWN AND THE EASTERN DISTRICTS.

BY THE HON. W. GUYBON ATHERSTONE, M.D., F.R.C.S., F.G.S.

This area may be said to include all that portion of the Cape Colony between the main chains of mountains and the seaboard to the eastward of the 26th parallel of longitude; the home, in fact, of the British Settlers of 1820 and their descendants. It is divided, as are the southern and western parts of the Colonies, into three terraces, separated by mountain ranges running parallel to the coast.

1st. A coast plateau extending to the base of the first mountain range, about 1,000 feet altitude, embracing the districts of Alexandria, Bathurst, Peddie, East London, and Komgha.

2nd. The midland terrace, between the altitudes of 1,000 and 2,500 feet, comprising Albany, Somerset, Bedford, Fort Beaufort, Victoria East, Stockenstrom, and King William's Town.

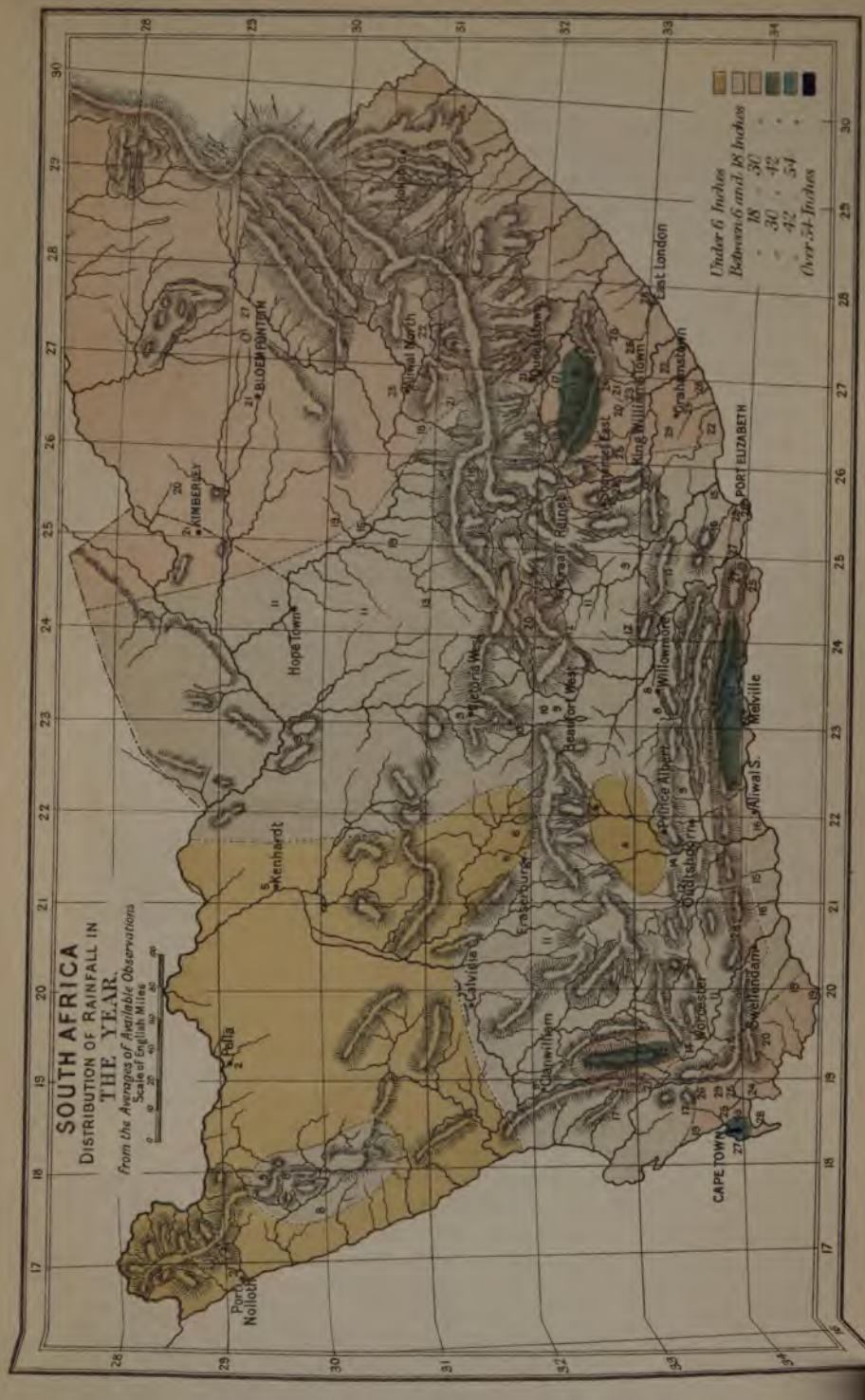
3rd. The upper plateau, from 2,500 to 5,000 feet above the sea, in which are situated the districts of Cradock, Tarkastad, Queen's Town, Stutterheim, Cathcart, Wodehouse, and Aliwal North.

The climate of this important and interesting part of the Colony is as varied as the physical character of its fiscal subdivisions are diversified in altitude, soil, vegetation, geological formation, and capacity for absorbing and retaining or throwing off the rainfall, and thus affecting the moisture or dryness of the climate, and its range of temperature,—the chief meteorological factors in considering the claims of particular localities for selection as health resorts.

In these three terraces, we have thus a *coast* climate, warm and moist and equable, its winter cold moderated by the warm sea; a *midland* climate, cooler, and drier and more genial, but with a greater range of temperature, due to its altitude and the greater amount of evaporation from diminished pressure, its mean range varying from 18° to 20° ; and a *mountain* climate drier still, and more bracing, but with much greater extremes of temperature, cold nights and hot days, the mean range being more than double that of the lower or coast plateau. Taking Port Elizabeth, Graham's Town, and Aliwal North as representing the three types of climates, the following taken from tables compiled by the Cape Astronomer-Royal in 1881, of four years' observations, 1876 to 1879, will justify these remarks, which are also substantially borne out by later and more complete tables compiled by the Meteorological Department.

It will be seen that Graham's Town has the *lowest* mean temperature in summer, and the smallest range in *winter*, and the largest rainfall, which occurring in summer cools the heat, and explains its low temperature. The humidity is also less than at Port Elizabeth, although the rainfall is $\frac{1}{3}$ more (nearly 30 inches to 20 inches, at the coast station); whilst the dry winter reduces the range to 12·8, that of Port Elizabeth 14·1.

TEMPERATURE.								Humidity.	Rain.	No. of days on which rain fell.	Wind.
1876-1879.		Mean temp.	Absol. max.	Absol. min.	Mean of max.	Mean of min.	Mean range	Complete saturation = 100.	Amount in inches.		
1. COAST PLATEAU (E). Port Elizabeth alt. 180 ft.	Summer	66·8	94·5	48·5	75·0	60·4	14·6	75	19·99	49	S.E. N.E.& N.W.
	Winter	59·5	97·5	43·0	67·4	53·3	14·1	80			
2. MIDLAND. Graham's Town alt. 1,800 ft.	Summer	63·1	99·0	44·0	74·3	56·6	17·7	74	20·59	77	S.W. WSW
	Winter	53·1	82·0	35·0	63·7	60·9	12·8	77			
3. MOUNTAIN. Aliwal North... alt. 4,330 ft.	Summer	67·4	102·0	41·0	88·2	55·8	34·4	55	22·86	89	S.E. N.W.
	Winter	48·8	84·7	24·0	62·6	33·4	34·2	77			
3. MOUNTAIN. Colesberg Brdg. alt. 3,600 ft.	Summer	60·7	101·0	33·0	85·3	54·9	30·4	44	18·35	69	S.E. S.E.
	Winter	49·3	84·5	23·0	66·8	30·2	27·6	73			
1. COAST (W.). Wynberg alt. 250 ft.	Summer	61·8	96·0	42·0	76·2	65·2	11·0	75	34·02	92	S.E. N.W.
	Winter	55·3	92·0	41·5	69·4	49·2	17·2	83			



The character of the vegetation, soil, and geological formation exerts also a considerable influence on climate and health. The rank luxuriant hairy grass is generally met with in the coast lands, and on the "Zuurberg" Mountains, hence named "Zuurveldt" or "Sour grass" country. The greater part of Lower Albany, Alexandria, Bathurst, Peddie, East London, and Keiskama to Fort Beaufort, is of this character. It is far less nutritive than the grass of the middle terrace, which is generally "sweet grass," or alkaline bush, the rock formation being shales or conglomerate, rich in alkalies and lime. Stock from this country sent down to the coast lands often sicken and die from the change, gorging themselves on the coarse grass, which requires twice the quantity to give the same amount of nutriment. A mixed herbage is met with on the mountains of the upper terraces, a luxuriant red grass, highly nutritious; and on the plains the stunted Karroo shrubs, bitter and alkaline, or a mixture of both, called "gebroken veldt"; and in some parts the mimosa thorns, always an indication of good country for stock.

The special advantages of the climate of each district for individual cases has, of course, to be considered separately. Dr. Drew has ably set forth the claims of Alexandria; Dr. Egan those of King William's Town; Dr. Pearson those of Seymour and the Katberg; but generally the whole of the Eastern Districts have a reputation for salubrity and almost entire absence of malarious and endemic diseases. The extraordinary increase of the descendants of the original settlers during the two-thirds of a century that have elapsed since their arrival here in 1820; the advanced age to which so many of them have attained; the tall stature, and healthy physical development of the frontier residents generally, both Dutch and English, as well as the splendid physique and healthy appearance of the native races, Kafirs and others, and their rapid rate of increase, all point to the healthy character of climate and soil.

One of the advantages of Graham's Town as a sanitarium, in addition to its elevated site, fine climate, and pure air, is, as already related, the facility with which invalids can remove by rail to a higher or lower level, to the soft warm balmy air of the coast, where no frosts are known, or the keen dry mountain air of the Katberg, Winterberg, or Stormberg. Another is, that the patient is within easy reach of the comforts and luxuries as well as the necessities of civilised life, and the pleasures of English society—advantages most important, yet too often overlooked or disregarded, in the choice of a suitable residence for invalids. Of what avail to

the unhappy consumptive with body and mind out of gear, is a healthful climate if shut out from the world and society, and from all sources of mental and physical enjoyment. Here pleasurable occupation and amusement suited to every taste, with sufficient inducement for out-door exercise—often as essential as medical treatment or pure air in cases of lingering diseases—are readily obtainable. To the sportsman the deep wooded kloofs of the neighbourhood offer abundant excitement. Antelopes of various kinds, the rhebok, blauwbok, and boschbok, with hares, pheasants, partridges, are found close by; herds of buffaloes still haunt the tangled thickets of the Kowie bush; the duyker and oribie on the grassy flats near Bathurst, and the graceful gazelle of the Cape (the springbok), with korhaan and guinea-fowl on the plains towards Bedford and Somerset. To the angler the deep shady pools of the Kareiga, within a few miles, offer tempting attractions, and to lovers of the picturesque, those enjoyable picnic and boating excursions to the different watering places—the Kowie, Kasouga, and Kleinemont—afford in all seasons pleasing change and variety. Whilst to those of intellectual habits and literary taste, the various institutions of the city, its reading-rooms, circulating library, museum, and botanical gardens, are at all times accessible.

Invalids who have experienced the effects of both climates, assert that there is no comparison between the clear, dry, invigorating climate of this part of the Colony, and the warm, moist relaxing heat of Madeira, which has hitherto enjoyed the monopoly of a sanitarium for chest complaints.

During my professional life of 45 years in Graham's Town, I have known cases of consumption *far advanced* completely recover, and even phthisical cavities have cicatrized, and the progress of the disease has been entirely checked when confined to one lung. I have known also cases of hereditary consumption completely eliminated from the system by a prolonged residence in the drier inland parts of the Colony; and I can confidently state, that if the unhappy victim of hereditary consumption were to be sent out to this Colony three or four years before the expected period of attack (as shown by the history of other members of the family), and kept here in some favourable locality until three or four years after that age, there would be every chance of the hereditary taint being entirely eliminated from the system. In most cases the patient returns home too soon after he feels himself well, and the irritative matter in the air of his native clime lights up again the dormant germs of his old complaint.

(3) THE CENTRAL KARROO DISTRICTS.

BY H. W. SAUNDERS, M.B. LOND., F.R.C.S. ENG.

The plateau of the "Karoo" or "Great Karroo" is a vast tract of country in the Western and Midland Provinces of South Africa, lying between the Roggeveld and Nieuwveld mountains on the north, and the Zwarteberg mountains on the south, and extending from the Hantam in Calvinia District to Sunday's River in the Graaff-Reinet District, that is, over five degrees of longitude.

It includes, for the purposes of a general description, the fiscal Divisions of Tulbagh, Worcester, Prince Albert, Beaufort West, Murraysburg, Willowmore, Aberdeen, Jansenville, part of Somerset East, Cradock and Graaff-Reinet.

The approximate average level of the Karroo is about 3,000 feet above sea level. To show the gradual rise to the north we may give the approximate heights of the chief towns, viz.: Tulbagh, 400 feet; Worcester, 780; Ceres, 1,700; Prince Albert, 2,100; Beaufort West, 2,850; Aberdeen, 2,400; Somerset East, 2,400; Graaff-Reinet, 2,500; Murraysburg, 3,800; Cradock, 2,856. The average height of the Nieuwveld, Roggeveld and Zwarteberg mountains may be taken at 5,000 feet, but some of the peaks rise over 7,000 feet.

The *climate* of the Great Karroo is characterized by its extreme dryness, severe and prolonged droughts occurring at intervals, whilst at the best seasons rains seldom fall.

The temperature is intensely hot in summer, much more bearable, however, than an equivalent heat in a moister atmosphere, and the nights are cool, at least on the plains, away from the immediate vicinity of the mountains. The skies in summer are mostly of brass, unclouded, except by the cirrus of heat on the horizon.

Winds in summer are not infrequent, but they are mostly from the north and north-west, and having passed over or perhaps originated in the desert, are comparable to the simoom on a small scale, bringing great clouds of red dust with them, and feeling as if coming from an oven; they seldom blow long. Some places nearer the coast come under the influence of the south-east trades, such as Tulbagh, Prince Albert, Worcester, &c.

Thunderstorms are not very frequent, but are often of great violence, and often follow in the wake of the north-west winds;

in a few hours vast tracts of country may be transformed into temporary lakes, and great damage is done by the bursting of dams and overflow of rivers at these times.

The winter is characterized by very cold nights and early mornings, with several hours of bright sunny weather between 9 a.m. and 3 p.m., or thereabouts. The air is remarkably clear, bright and bracing; yet, except in the higher parts of the Karroo, a fire in the sitting room is generally a luxury rather than a necessity, although often acceptable in the evenings.

Snow generally falls on the mountains, and sometimes on the higher plains; but for the most part no snow lies in the plains of the Karroo proper—Beaufort, and especially Murraysburg and Cradock, being exceptions.

The winter of the Karroo is, in the writer's opinion, the best season for pulmonary invalids; but unfortunately, it is just the time at which none such arrive, coinciding, as it does, with the European summer. Of this more will be said hereafter.

Taken as a whole, the air of the Karroo may be considered to present some, at least, of the features of mountain air, of which, according to Dr. Weber, the main physical features should be:—

1. Purity; comparative absence of floating matter.
2. Dryness of air and soil.
3. Coolness or coldness of air temperature and great warmth of sun temperature.
4. Rarefaction.
5. Intensity of light.
6. Stillness of air in winter.
7. A large amount of ozone.

In winter all these features are present in greater or less perfection, but in summer the great heat, the prevalence of winds, often dust-bearing and very hot, and other drawbacks, often lead to lassitude and loss of appetite; there is further the impossibility, except in the robust, of taking the amount of exercise and outdoor life demanded by the disease; further, the inadequate ventilation found in most of the houses renders indoor life unhealthy.

The most feasible escape from these drawbacks is, in my opinion, to get to the mountain heights in the summer; up to the present time this has not been practicable from the want of any accommodation for invalids, but steps are being taken *to supply this want.*

For instance, Dr. Davey, of Beaufort West, is now recommending in the *Lancet*, a comfortable home with a Scotch family on the "Nieuwveld Mountains." The summit of the pass now in course of construction over the Zwarteberg Mountains, from Prince Albert, is also highly recommended by my friend Dr. Mearns, of that village, having the advantages of ozone-laden winds in summer from the sea, a plentiful supply of pure mountain water from a beautiful stream at hand, and a view over the fertile district of Oudtshoorn; hence also a short excursion leads one to the beautiful stalactite caves of the Cango. If sufficient encouragement could be given, no doubt properly constructed institutions could be established under medical supervision at these and other favourable spots, and the Karroo would then offer the invalid an all-the-year-round residence which would compare with advantage with that in any part of the world—the summer to be spent in the mountains, the winter on the plains—thus fulfilling the indications now greatly and wisely insisted upon, namely, an uninterrupted residence in and about the same locality.

Nothing has astonished the writer more than the haphazard manner in which consumptive patients are bundled off to South Africa, without regard to the phase of the disease, peculiarities of temperament, or the appropriateness of the climate; and the ignorance displayed of the varieties of climate of South Africa would be laughable, if its consequences were not often so sad. Probably within the bounds of the Colony we possess climates more varied than can be found in any equivalent area in Europe, and yet the formula suffices, "go to the Cape." The wet season on the south and south-western coast, for example, is the winter; on the eastern seaboard it is the summer.

Too often invalids act at their own or friends' instigation, having an instinctive preference for a warm climate, or attracted by the reputation of "the Cape"; but still more frequently the medical attendant or even the consulting physician is equally careless or ignorant in this respect, and either sends incurable and unsuitable cases to die far away from friends and the comforts of home, or having selected an appropriate case sends the patient, without any precise instructions, to take his chance.

Even Dr. Weber, in his recent Croonian Lectures, has fallen into error about South Africa. He advises patients to travel up-country by ox-wagon from Wynberg or Graham's Town. Considerable astonishment would be caused by this method of travelling in a country, all, or nearly all, the chief towns of which are now either on or near lines of railway, and even

Bloemfontein* is little more than a day's journey from the present terminus at Kimberley.

No doubt, the opportunities of acquiring precise information regarding these points are extremely meagre; neither the countless popular books of travel, nor even the writings of the late Dr. Harry Leach and others, are to be relied upon as accurate, and it was the intention of the medical profession here to compile a medical handbook for the Cape (with full particulars of each district and village) for the Colonial and Indian Exhibition, but it was found that the time allotted was too short; but this is a desideratum we may shortly hope to see supplied.

As Dr. Weber says, the influence of long-standing routine mostly guides the practitioner when he selects the most appropriate climate for consumption, the idea of this being ultimately associated as regards treatment with that of warm climates. The formula is "choose the warmest climate accessible," and so one locality is chosen above another on account of an insignificant difference in the mean heat of the year or season. These premises, that cold favours the formation and development of tubercle and that heat deters them, rest upon no proof, and a reaction has set in in some quarters, resulting in an opposite theory, viz., that *cold* climates should be exclusively employed. These extremes have produced as a resultant the theory of *altitude* as the great preventive and curative of phthisis.

Dr. Jaccond's writing on this subject is diffuse and somewhat difficult to follow, but his argument condensed is to this effect:—"That, seeing that alike in very hot and very cold climates phthisis is very prevalent, whilst there are numerous elevated places in the Andes, Switzerland, Silesia, &c., where at a certain altitude consumption is almost unknown, one is inclined to favour the altitude theory. This altitude varies for different places according to conditions of temperature. The altitude which preserves at one region will not do so at another, which at the same height has a warmer temperature."

If this theory be applied to the Karroo, it is doubtful whether, on account of the latitude, any altitude obtainable on the plains comes up to the standard of requirement, and it is pretty certain that there is no region in which *absolute* immunity from phthisis amongst the native-born inhabitants can be claimed. Nevertheless the writer knows from the experience of a three years' residence, and from communications from various medical men in these districts, that phthisis, especially tubercular phthisis, is almost unknown in many parts.

The study of the whole question shows decisively the healthful

* Bloemfontein is now in railway communication with the Cape Colony through Colesburg (August, 1891).

influence of life in the open air; so that with an agricultural or pastoral people, the lower limit of protection descends, and *vice versa* sedentary occupations cause it to ascend. It might be inferred that the protection conferred by altitude is illusory, and that the result depends upon mode of life—yet this would be a complete error, since the most favourable mode of life, that of an agricultural population, is powerless against the effects of low altitudes.

The climatic conditions which are associated in South Africa with an altitude which confers immunity from phthisis, are chiefly a temperature cold in winter and cool in summer, the winds having a special direction at fixed times during summer, and scarcely existing in winter, and a complete pureness of air. These conditions, plus a high altitude, give us the type of climates which are tonic and stimulant, *i.e.*, curative. I believe they may be found at several places in the manner already hinted at, *viz.*, a residence on the summit of the mountain ranges in summer and on the plains in winter, if the cold be found too severe in the higher altitude.

The forms of consumption in which altitude climates are advisable are thus summed up by Dr. Hermann Weber:—

1. Hereditary and acquired tendency to phthisis.
2. The so-called “phthisical habitus.”
3. All conditions comprised by the term “phthisis,” excepting cases which are described as *non-suitable*, *e.g.* :

- (a) Patients of the irritable constitution at any stage of the disease. (b) Very advanced phthisis. (c) Phthisis complicated by emphysema. (d) Phthisis complicated by albuminuria. (e) Phthisis complicated by disease of the heart. (f) Phthisis complicated with ulceration of the larynx. (g) Phthisis complicated with rapid progress and constant fever. (h) Phthisis complicated with great loss of weight. (i) Phthisis complicated with considerable empyema. (j) Phthisis in persons who cannot sleep or eat at high stations, or feel the cold too severely.

A tendency to *Hæmoptysis* was formerly regarded as forbidding mountain climates, but this is now regarded as an error; it is said, in fact, that it occurs less frequently in these high regions; nevertheless, in such cases, considering the remarkable call made upon the circulatory and pulmonary systems by a sudden change to a highly rarefied atmosphere, it would, I think, be better, as a matter of prudence, when there is a great tendency to *Hæmoptysis*, to make the upper journey by easy stages.

Probably in theory the open air, tent and wagon life recommended by Livingstone for the Kalihari region, would be the

most perfect, but it is seldom practicable, except for the most robust; it would be too hot in summer, too cold in winter, besides being unfitted in other ways.

On the whole, however, the Karroo climate is favourable to out-door life. In summer the whole day can be passed in a well shaded verandah, or in a hammock slung between trees, and in winter the calm, dry, cold air is inviting to exercise, and the summer evenings, if the patient be prudently clothed, can be utilized for exercise.

Unfortunately the house accommodation, from an invalid's point of view, leaves much to be desired. The common plan of keeping the house cool is to shut it up all day long in summer, opening the doors and windows only in the early morning; the result is good, so far as coolness is concerned, but an atmosphere is produced thereby which lacks the constant interchange of fresh and foul air demanded by conditions of health, and still more by those of disease. The houses are also, as a rule, badly ventilated and ill-constructed, comfort being sacrificed to economy, building being excessively dear.

There is a great lack of shady walks, also, on account of the absence of woods. In some villages the streets are well planted, notably Worcester, Beaufort West and Graaff-Reinet.

The farm houses are for the most part situated on the open plains, and have a few trees planted in the vicinity, and frequently productive vegetable and fruit gardens and orchards.

Food is on the whole cheap and wholesome, but lacks variety, and the cooking leaves much to be desired for invalids; the supply of milk, fresh butter and eggs varies very much according to the locality and the season; "always a feast or a famine" is almost a South African proverb. Vegetables are well supplied at some places and very scanty at others; a fact dependent more upon the abundance or otherwise of the water supply than upon difference of local industry.

Most of the villages contain several hotels, at which the charges are moderate, about £7 10s. to £10 per month for board and lodging, and boarding-houses somewhat lower; and lodgings with private families can generally be negotiated. A fair house can often be obtained for from £3 to £6 per month unfurnished.

Illustrative cases.—The nature and scope of the Handbook forbid the insertion of cases reported in extenso, but a few jottings from various sources may not be uninteresting, as illustrating the remarks already made.

Dr. Zahn, of Ceres, reports that the death rate for lung and pleura diseases in the district, with an European population of 2,000 is as follows:—Between 1872 and 1884, five cases of *chronic* and six of *acute* lung disease (exclusive of children

and of those who have emigrated with diseased lungs). In the case of coloured natives, Dr. Zahn is unable to make a satisfactory statement, as they do not as a rule fall under his notice, but he believes lung disease to be rather prevalent among them, due to poverty, intemperance and bad hygienic surroundings.

Since 1872 only one case of mileory tubercle in a youth of eighteen.

Many invalids suffering from phthisis have visited Ceres, and have as a rule been benefited, but Dr. Zahn is unable to report a single instance of complete recovery, usually, he believes, because the stay was too short or the disease already far advanced.

Dr. Hurford, of Ceres, reports that many cases of pulmonary disease have been greatly benefited by a sojourn there.

Dr. Davey, of Beaufort West, reports that many cases of advanced phthisis have come to Beaufort, with often the result of a certain improvement at first, but, with the exception of a very few, this was temporary only; the comforts of home and the presence of friends and relatives are much missed, and their want helps to make matters unsatisfactory. It is far otherwise in the earlier stages of phthisis: here a residence in these parts often works wonders, especially if patients are in fairly comfortable circumstances.

Dr. Mearns, of Prince Albert, reports that during a residence of more than seven years he has remarked a special immunity from pulmonary consumption and asthma. The place is not much resorted to by invalids because the virtues of the climate have never been made known, and perhaps also because there is no first-class accommodation for invalids.

Dr. M. reports the following cases among others:—

1. G.R., aged 19, came in 1879 with marked dulness at both apices; on left, breaking down of tissue, muco-purulent, frequently sanguineous expectoration, night sweats, emaciation, bad appetite. After four months he left with marked improvement in all symptoms, the disease of left apex stationary.

2. W.C., aged 42, came in January, 1882, advised by his medical men that he had not six months to live. Cavities in both lungs, great emaciation, night sweats, purulent expectoration, with frequent hæmorrhages, loss of appetite, and, in short, he appeared to be sinking rapidly. Improvement was steady and marked; he gained weight, appetite returned, night sweats almost ceased, and one cavity appeared to have closed; he continued to improve until 1883, when he got chilled in returning from Cape Town, pleurisy supervened, and it was long ere he regained strength. He continued moderately well, taking a good amount of exercise, till 1884.

2. *Off a line of Railway :—*

1. *Tulbagh*, from Tulbagh Road Station a few miles by cart (76 miles from Cape Town).
2. *Ceres*, 10 miles from Ceres Road Station, which is 85 miles from Cape Town.
3. *Prince Albert*, 30 miles by passenger cart from Prince Albert Road Station, which is 265 miles from Cape Town.
4. *Murraysburg*, about 50 miles from Nelspoort Station, 371 miles from Cape Town.
5. *Somerset East*, 16 miles from Cookhouse Station, which is 126 miles from Port Elizabeth.
6. *Jansenville*, 18 miles from Mount Stewart Station, which is 113 miles from Port Elizabeth.
7. *Aberdeen*, about 30 miles from Aberdeen Road Station, which is 145 miles from Port Elizabeth.
8. *Willowmore*, 73 miles from Barroe Station, which is 103 miles from Port Elizabeth.

(4) THE UPPER KARROO PLATEAU.

By J. BAIRD, M.D., L.R.C.S., L.R.C.P. Ed.

The immense tract of country included under this area embraces the Upper Karroo plateau sloping from the midland mountain ranges to the valley of the Orange River. It includes the fiscal divisions of Aliwal North, Albert, Colesberg, Middelburg, Hanover, Hope Town, Herbert, Kimberley, Richmond, Victoria West, Fraserburg, Carnarvon, Calvinia, and part of Namaqualand. This plateau varies in height from 2,700 to 6,000 feet above sea-level, one point, the Compassberg, 7,800 feet, being the highest point in the Cape Colony.

To medical men and invalids the great and characteristic feature of this elevated plateau is the nature of its climate, and its suitability as a residence in certain diseases of the lungs. The following remarks are intended to show this, as far as can be done by words.

There cannot be said to exist any well-marked division of the year into Spring, Summer, Autumn and Winter; rather it may be described as a long summer and a long winter. The former begins rather suddenly about the month of September, increases in intensity till January, and then decreasing till the end of April, while the latter may be said to last from the end of April till the month of September. During the first half

of the summer months a westerly or north-westerly wind prevails during the day, which is very warm and dry; it often blows with great force, bringing with it clouds of red sand. Towards evening the wind abates, and is followed by a steady, cool and refreshing breeze from the south-east during the night, which quite invigorates and braces after the hot winds of the day. Towards the end of December or the beginning of January thunderstorms are common, accompanied by a great downfall of rain, often with hail showers. These storms are of short duration, and their effect is such as to infuse new life into every living thing. With the exception of these thunderstorms, it may be said that for the whole summer life is led under a cloudless sky. The heat in summer, although great—and on some days the thermometer ranges as high as 110° F. in the shade—cannot be described as oppressive, except it be shortly before a thunderstorm, when the sky is overcast. This is owing to the excessive dryness of the air and to a gentle current of wind which almost always blows. But even with the very hottest days a cool night can almost invariably be depended on. The winter in this region is most delightful during the day. The air is dry, clear and sharp. But during the hours between sunset and sunrise the air is very cold, accompanied by sharp frosts. Often the pools of water are frozen over, but the ice melts soon after the sun rises. Snow falls but rarely, in some places once in five or six years, and that in no great quantity. While these remarks apply generally to this whole area, it will be understood that the climate will vary somewhat as we approach or recede from the mountains which form its boundary.

To enable an idea to be formed of the climate of the different Divisions, I shall quote from the reports of competent medical observers on their different towns and districts.

At the extreme east of this area lies the Division of Albert. From Burghersdorp, the chief town of this division, Dr. Kannemeyer thus reports:—"The chief summer months are hot and relaxing during the day: the mid-winter nights are cold. During the rest of the year the weather is temperate and delightful. The sun is rarely obscured, never for a whole day, mostly and gratefully by thunder clouds during the hot summer afternoons. We live practically under a cloudless sky. Our principal rainfall is in summer, sharp and short thunderstorms. These showers are very refreshing. The range of temperature in summer is high on the plains. In the Stormbergen (Mountains) it is more equable, the heat never oppressive during the day, nor are the nights cold; and there is more rdure and humidity. In winter, the days are cloudless, rain-

less, sunny, and very dry on the plains. Between sunset and sunrise, the air is very cold and frosty. Snow is rare. The mountainous parts are cold and comparatively damp, frosts heavy and snow occasionally. Mists or fogs are unknown on the plains; in the mountains they occur frequently."

A little further to the West of Albert, and not far from the Sneeuwberg range of mountains, lies the Division of Hanover. From Hanover, the chief town of this Division, Dr. Wm. Bourke sends the following report:—"The climate of this district is a particularly dry and bracing one. The winter is seldom severe—being comparable to that of the South of France, the days throughout that season being bright and balmy. On only one occasion was the thermometer known to register 20° of frost. The summer months are warm, and in the absence of the light prevailing winds, they approach a tropical heat; but as a rule you can depend on a gratefully cool evening. The sun throughout the year reigns supreme in the heavens, and seldom, indeed, if ever a day passes without its radiant beams being both seen and felt. For the past three years the average rainfall was 10·2 inches—distributed on an average over 34 days or portion of days in the year. There is little or no snow during the winter."

To the West of Hanover lies the Division of Richmond. Dr. Fick thus reports of his town and district:—"To the South and East, the district of Richmond is bounded by a formidable range of mountains, the Sneeuwbergen, one point of which, the Compassberg, is the highest in the Cape Colony, being 7,800 ft. above sea-level. During winter we often have beautiful days—no wind or dust—a cloudless sky—a bracing air, and the sun sufficiently strong to make staying out of doors a pleasure. The winter nights are cold—the minimum of temperature measured once by me was 8° C. When the summer sets in the windy days begin, bringing a great deal of fine and coarse sand even through closed shutters. Mornings and afternoons are always fresh and pleasant even in the hottest time of the year. In summer, heat at midday is piercing, but not oppressive."

To the North of the Divisions of Hanover and Richmond lies the large Division of Hope Town, having for its northern boundary the Orange River. From Hope Town, the chief town of the Division, Dr. E. B. Muskett thus reports:—"The surrounding country consists chiefly of large plains, often sandy, with hills, some of considerable elevation. The town itself is situated in a valley opening towards the Orange River, the river being distant about 1½ miles. The prevailing wind is from the westward and blows frequently with force

during the early summer months. The thermometer may rise to 100° F. in the shade in summer and fall to 20° F. in winter. The air is extremely dry. Rainfall very scanty, said to average 5 inches, and falls almost entirely in thunder showers, rain without lightning being rare. Snow is rare, but tolerably severe frosts occur at night in winter. Ice always melts before the middle of the day."

Further to the West of the Division of Richmond, and forming the apex of this triangular area, lies the extensive Division of Fraserburg. From its chief town, Dr. H. P. Butler reports as follows:—"In winter there is dry cold for the most part, but the frost is very severe, sometimes registering 19°. In summer it is very hot and dry in daytime; but the evenings are very pleasant, being cool. The sun is rarely obscured either in summer or in winter. The thermometer varies in summer from 90° to 110° F. in the shade. In winter it varies from 24° to 70° F. The rainfall is very slight, being 2 to 4 inches for the past few years. Snow often falls in winter. The air is very dry."

From the Division of Carnarvon, to the North of Fraserburg, Dr. Hanau reports very much in the same terms as those of Dr. Butler.

When we take into consideration the extreme dryness and porous nature of the soil, the great elevation above sea-level, the temperature and dryness of the air, the practically cloudless sky, permitting almost constant outdoor life, and if to these we add the scantiness of population and the absence of hurry, worry and bustle which characterise European life, we have an almost ideal set of conditions requisite for the alleviation and cure of certain diseases of the lungs, and especially phthisis. I say cure of phthisis advisedly, because cases of cure are within the experience of almost every medical man practising in this area. Further, the all but complete absence of pulmonary phthisis in persons born and bred in this area is proof of the favourable operation of the above conditions in this direction. The most convincing proof, however, is afforded by the record of cases by competent medical men.

In a personal experience of ten years' practice as a physician, in a district in the Division of Colesberg, with a population of about 3,000 white and coloured, and including all ages, only *two* cases of pulmonary phthisis came under my care, originating in natives of the district, but neither of which were tubercular. One case was that of a girl aged 16; she had a slight attack of pneumonia, which ultimately developed into phthisis. After careful treatment she gradually recovered, *married, and is now the mother of several children.* The other

case was one of syphilitic phthisis in a married woman. She died in childbed. Several cases from near the coast of this Colony, and from Europe, came under my care with phthisis, all of which were greatly benefited by residence, and followed active and useful lives. One case especially I can call to mind, that of a Mrs. A.B., who, in spite of extensive disease of both lungs, carried on an active business, reared a large family of children, and nursed for some years a paralytic husband. The only signs of illness she exhibited were occasional attacks of coughing, and in the summer, slight streaks of blood in the spectrum. I am fully convinced that had this patient been living at or near the sea coast of this Colony, or in any part of Great Britain, she would long ago have succumbed to this dire disease, whereas she is alive and actively employed at this present time.

The following short history by Dr. E. B. Muskett, of Hope Town, of two cases which came under his notice within the last few years, speaks volumes:—

“R. P. and C. P., two brothers, aged respectively 18 and 19 years, arrived in Hope Town three years ago. Their two elder brothers died within eighteen months of rapidly developing consumption. On the death of the last they took fright, and had their lungs examined by two physicians, separately, one a specialist. Both pronounced the young men to be suffering from the incipient stages of phthisis, and recommended them to leave England immediately, which they at once did. On examination of their chest on their arrival in Hope Town, both were found to be in an almost similar state—dulness over a considerable area at the apices of both lungs, more pronounced on the left side, lengthened expiratory murmur, some crepitation, flattening of the chest in the affected region and diminished movement. In addition they suffered from muscular weakness, shortness of breath on exertion, and loss of flesh. They also had slight cough but no expectoration. At the end of *six months* the physical signs had much diminished, and they had regained strength and flesh, the younger so much so that his clothes were too small for him. At the expiration of *a year*, the physical signs *had disappeared*, and they *felt otherwise well*. Now, after *three years* the one *pursues a laborious profession in Kimberley*, the other *has returned to England*; both are in the enjoyment of excellent health.”

Dr. Fick, of Richmond, thus reports of his own case:—“I, myself, am a fair sample of a man who has benefited by residence in this climate. I came from Germany in 1879, partly because I was suspected to be consumptive. After a few years’ stay in Richmond, my whole appearance was altered.

I became hale and hardy, and had gained in weight 40 lbs., weighing 180 to 190 lbs."

From Burghersdorp, in the Division of Albert, Dr. Kanne-meyer reports as follows:—"I have more than once had the opportunity to see cases of phthisis coming from Europe, but too far advanced for cure, derive temporary benefit during their sojourn amongst us. Incipient or early cases at once improve. Hitherto invalids frequenting this part of the country in search of health have made their stay too short, or have come too late. Continuous residence is necessary to establish a cure. There are about half-a-dozen persons residing in this town at present, leading useful lives, who came here as confirmed invalids, and whose lives have been undoubtedly saved by continuous residence."

From the town of Hanover, Dr. Bourke sends the following:—"There seems to be a special immunity from Consumption enjoyed by the inhabitants of this district, as it is seldom if ever met with among the people born and bred in this district. . . . There are to my knowledge two cases of Consumption in this district to all intents and purposes cured. The individuals in question arrived from England with the disease in a most aggravated form; and now after several years' residence, they are practically restored to their former health and vigour. The late District Surgeon of this place is another instance in point. For notwithstanding the advanced stage of the malady on his arrival in this Colony, he was enabled, through the beneficial effect of this climate, to carry on the arduous duties of a general practitioner for *ten* years; and it was only on his return to England that he succumbed to the disease. Other two cases occur to my memory in which the patients are being gradually restored to health and vigour."

Dr. J. Hanau sends the following instances from the town of Carnarvon:—"A German gentleman (a missionary), about 54 years of age, is reported to me by good authority as having suffered from consumption some twelve to fifteen years ago. He is now so well that as long as I have known him he has not required medical attendance. Another German, aged 30, in whose family there is hereditary predisposition to consumption, became ill in this Colony, and exhibited signs of phthisis after an attack of pleurisy. He is now attending to his business, and seldom requires professional advice. A young gentleman, aged 21, born in Cape Town, with a family predisposition, was warned by his former medical attendant, and while resident in Cape Town was constantly troubled with attacks of bronchitis, now finds himself as well as possible, *and is never* troubled by his old complaint."

The late Dr. L. Gogol, District Surgeon of Murraysburg—a district to the South of Richmond—in reporting to the Government in the year 1882, says:—"During a practice extending over five years, I have not hit upon *one* patient with pulmonary phthisis, born in this or the adjoining districts."

These are but a few of the examples of benefit derived from residence in this area. If space permitted, their number could be very largely increased by drawing on the case-books of any physician practising within its limits. They will, however, suffice to establish the truth of the statement, that not only can phthisis be alleviated and life prolonged, but that it can actually be cured by a sufficiently long residence.

Although, from the grave nature of the disease, and because of the brilliant results recorded of its cure, phthisis has been chiefly and especially mentioned, this is not the only disease benefited by residence. Many cases of asthma and chronic bronchitis are on record where benefit has been derived. Indeed, speaking generally, cases requiring a dry, warm air and altitude are all benefited.

With a record such as the foregoing, it would seem strange that the advantages of residence here are not more widely known and generally used by Europeans than they at present are. One reason for this is the fact that sufficient attention has not been drawn to it by medical men in the European Medical Journals. But the chief reason for its neglect is the fact that until quite recently it was very difficult of access. Before the discovery of the Diamond Fields, which lie beyond this area, it was to Europeans at least an unknown country; the usual mode of travelling at that time was the slow ox-wagon or on horseback. When the wealth of Kimberley attracted a large population from all parts of the world, the ox-wagon gave place to the speedier passenger coach and the post cart. These are now supplanted by the railway, which runs right through the centre of this area into Kimberley beyond. What was twelve years ago a journey causing much expense, time and trouble, can now be accomplished with cheapness, speed, and all the ease and comfort of a Pullman car. What it formerly took days to accomplish can now be executed with comfort in hours.

There are no Hospitals or Sanatoria for the reception of invalids in this area. Those, therefore, who contemplate a residence here will have to depend upon Hotels, Boarding Houses and private lodgings. Board and lodging in any of these establishments ranges from £6 to £12 per month according to the mode of life and accommodation. For those who contemplate housekeeping on their own account the fol-

lowing information will be of service. Unfurnished houses are obtainable in most of the towns and villages, and cost from £2 to £6. 10s. per month according to accommodation. Domestic servants are almost all drawn from the coloured classes. Their wages range from 15s. to 30s. per month with food. These servants as a general rule are by no means of the best, but often very good, well trained, and faithful servants are to be met with. The general rule is that servants do not sleep in the houses of their employers, but leave for their own homes at night and return early in the morning. With regard to food, beef and mutton are cheap and plentiful, the average price being 6d. per lb.; bread, 2 lb. loaf, 6d. Milk and butter depend so much on the nature of the seasons and the rainfall, that no general rule holds good for the whole area. After a good season with heavy rainfall, both butter and milk are plentiful, and the latter very good in quality. The prices will then range for butter from 1s. to 3s. per lb., and for milk 3d. to 4d. per quart bottle. In dry seasons, again, milk is scarcely to be had for payment, but where it can be had it varies from 4d. to 8d. per quart bottle, while butter ranges from 2s. to 4s. per lb. Canned or imported milk and butter are both extensively used during the dry seasons. During the summer eggs are cheap and plentiful, but during the winter they are dear and scarce: the price varies from 1s. to 2s. 6d. per doz. When the towns are situated on or near a river, such places, for example, as Aliwal North, Colesberg, Hanover, Philip's Town, Hope Town, river fish are obtainable. In winter, sea fish can be had by rail from the different Coast Ports. No prices can be stated for this kind of food, as it is looked upon more as luxury than necessary, and the supply is irregular. With regard to fruit and vegetables, the same remark applies as to butter and milk, all depends on the nature of the season. If rain is plentiful, and there are no untimely frosts, fruit and vegetables are abundant, cheap, and of good quality in most of the towns. Amongst the fruits grown in the town or on the surrounding farms, the chief are Oranges, Naartjes, Apples, Pears, Plums, Peaches and Apricots, Grapes, Figs, Mulberries, Loquats, Pomegranates, Quinces, Water Melons and Musk Melons.

Of the towns and villages within this area, and in which invalids would naturally be inclined to live, it may be said that they vary very much in appearance and size, according to the amount of water supply for irrigation purposes, and their age. Where water is abundant, foliage is plentiful, and the town or village has a cheerful and comfortable appearance; where it is *absent*, the town has a dry and desolate look. There are here

none of the historical associations, the beauteous landscapes, the refined society, or art collections of a Mediterranean health resort, nor the grand scenery of the Swiss Alps. The characteristics are, rather, a rough, wholesome plenty, and a free and primitive state of society. Many of the towns are dull and dreary, and when an invalid has no employment, time will hang heavy on his hands. It must be distinctly understood that a cure will not be the result of a few weeks or months' stay, but extend into years; indeed, it cannot be too often repeated, that to ensure a cure continuous residence is necessary. It must also be remembered that, although the English language is pretty generally spoken in the towns and villages, the prevailing language is Dutch, and that the habits and customs of the people are in many ways different from what prevails in Europe.

In spite of these disadvantages, after a few years' residence, the free and easy mode of life in these country towns becomes very pleasant, and is often looked back to with regret on the return to a large city. The conclusion of the whole matter is, what will not one do for dear life! To gain this one pearl of great price, all others can be dispensed with.

One word with regard to clothing. Many people, on leaving Europe for this country, load themselves with light, and omit to take warm clothing, supposing the latter not to be necessary. This is a great mistake. As will be seen from the foregoing reports, the nights are *very* cold, especially in mid-winter. It should be distinctly understood that exactly the same kind of clothing is necessary here as in Great Britain. Flannel and tweed are just as essential here as in the North of Scotland. Bearing this in mind will save much useless expense.

IV.—SOUTH AFRICA AS A HEALTH RESORT.

By E. SYMES THOMPSON, M.D., F.R.C.P.

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When the request was made to me that I should read a paper on the climate of South Africa, before the Fellows of the Royal Colonial Institute, at the opening meeting of a new session, I could not but feel gratified by the honour conferred upon me.

I am fully aware that some of my hearers may have spent half a lifetime in Africa; but it is one thing to live in a vast country, and another to collect particulars as to its climate and capabilities from the standpoint of a physician anxious to search into every region of earth and sea which may suit his purpose of giving or restoring health.

Fifteen years ago, when my first contribution on the subject was published,* I was able to record, as the basis of my work, the details of some twenty cases of disease treated for the most part in Natal and the Orange Free State.

Experience since gained, supplemented as it has been by information acquired during a recent visit, is my justification for venturing to address you on the subject.

On comparing the Southern with the Northern Hemisphere, the first point to which our attention is called, is this, that Sydney, Melbourne, Adelaide, and Cape Town, only distant about 34 degs. from the Equator, have a corresponding mean annual temperature—namely, about 63 degs.—with Naples, Nice, and the Riviera in from 41 degs. to 43 degs. north. At this latitude in the Northern Hemisphere we are accustomed to regard an elevation of from 5,000 to 6,000 feet as necessary to secure immunity from consumption. But the elevation above the sea at which such immunity is secured in South Africa is remarkably low.

* On the Elevated Health Resorts of the Southern Hemisphere, with special reference to South Africa.—Transactions of Royal Medical and Chirurgical Society, Vol. lvi., 1873.

In the district of the "Karoo" we find a region characterised by excessive dryness of air and soil, where, at a level of less than 3,000 feet above the sea, remarkable purity and coolness of air are secured, with an almost complete absence of floating matter; together with great intensity of light and solar influence; great stillness in winter; a large amount of ozone, and a degree of rarefaction of proved value in cases of phthisis.

In winter these conditions prevail in greater or less perfection in various places; in summer, however, the heat is apt to prove excessive, the winds hot and dust-laden, and it becomes difficult to take the amount of out-door exercise necessary for recovery.

A physician who is brought into daily contact with those who are seeking relief by means of climate treatment, is accustomed to arrange his patients into various classes.

First, those who require "change of air" to complete their convalescence from acute illness.

Second, those who need to be sheltered from the vicissitudes of our English winter.

And third, those for whom health can alone be anticipated if they are content to be separated for years, or perhaps for life, from the conditions under which their disease originated.

Our European health resorts supply us with varied means by which we may successfully meet the requirements of the first and second group: but our Colonies must be searched to supply what is wanted for the third.

As regards the first, however, a sea voyage with a short sojourn in a sunnier clime may accomplish more completely what is often sought in a too hurried rush across Europe.

As to the second, shelter from the dangers of a northern winter may be sought and found in the Southern Hemisphere as readily as in the south of Europe, and with less risk of renewed illness during early spring.

The public mind is slowly awakening to the knowledge that the British Empire has climates adapted for every form of constitutional defect. Let me emphasise and impress the fact that health and life may be secured and maintained at a higher level, and for a longer time, if we select with care and forethought the home for which we are fitted.

It is not enough to decide what occupation or profession should be chosen for our youth—we must also determine in which part of the Empire it may best be carried out. We must look at life from a large and broad platform, and regard our Colonies with gratitude, as affording health stations for our children and breathing space for our teeming home population.

At home, trained talent and strong health are alike essential.

But there are many whose strength and vitality are not sufficient for success in the high competition of this country. These, if transplanted to a colony where life is more restful and competition less keen, would rise to eminence.

It may be true that the Colonies, like the mother country, are overstocked; but men of exceptional ability will push their way in every community, and South Africa can boast of many in positions of high trust who could never have attained such eminence in a trying climate.

The present moment does not appear a very favourable one for settling in South Africa, but who shall say that it may not quickly change its phase, and those who arrive soon may have the credit of being the pioneers of a new and important development in a country the capacities and capabilities of which are unquestioned.

It would be out of place and inappropriate were I to venture here on any detailed description of the cases suited for the climates of South Africa. This could alone be attempted before a medical audience, and it was only yesterday I read a paper on the subject before the Medical Society of London.

In deciding where to send our patients, we need to be not doctors only, but students of character as well. We must not forget that the power of adaptation to new conditions is needful for the healthseeker in a new country.

It is useless to send to South Africa a man or woman whose comfort depends on the luxurious surroundings of home life, and who will never cease to grumble when difficulties arise. We must not expect success if we send to our Colonies those who have always drifted and have never exercised volition, have always been moulded by circumstances, and have never learned to overcome. The dyspeptic, who cannot digest hard, dry, or greasy meat, will be in perpetual difficulties, and those whose main occupation at home is to criticise their food must not be expected to change their habit when there is ample scope for its exercise. What is really more important than the nature or stage of disease is the character of the patient, and his readiness to enter into and enjoy his new life. He should be a man of resource, able to interest himself in the life of his neighbours. Those so often met with in South Africa, who have regained health there, are, for the most part, men of resource, ready to accept any post, and to undertake any work which may offer in the new country.

I would now say a few words in favour of a short pleasure trip to the Cape, not for invalids only, but for those who are seeking a new playground wherein to spend a summer holiday.

There are very many people who, tired of the London season and disinclined for the bustle of a scamper to the Swiss mountains or Scotch moors, may well seek pastures new. For such I would suggest a trip such as I have lately taken. Leaving the East India Docks at the end of July, after three weeks of perfect rest, in a Mail steamer having all the regularity and dependency of an express train on a well appointed line, you find yourself refreshed and renewed by a time of quiescence unattainable on land.

A vast change has come over the habits of men as regards holidays. In the time of John Gilpin, we have it on the authority of the devoted spouse herself, that they

“ For twice ten tedious years
No holiday had seen.”

The Pavilion at Brighton gives local expression to the idea—quite a novelty in the 18th century—that a seaside haven of rest was suited to a Prince Regent.

But this century has marked an amazing development; the recognition of the necessity for a summer holiday has spread from prince to peasant, and even the poorest of the East-Enders count upon an outing in the hop-picking season.

The development of the railway system has brought within reach places inaccessible before, and the application of steam to ocean transit has done much in bringing near lands previously beyond our ken.

Our schemes of benevolence enable those who add the sorrow of sickness to that of poverty to gain the benefit of the seaside or the country. My own hospital at Brompton has lately adopted a systematic plan of drafting off such patients as may need it to convalescent homes on the South Coast; and I have helped to establish a scheme by which the health-restoring luxury of a winter in the Engadine may be brought within the reach of those who cannot afford to pay for it.

Our American, African, and Australasian Colonies hold out attractions to those needing a holiday which cannot be surpassed. All members of the Royal Colonial Institute will support me in the opinion that if the idea of our responsibilities as citizens of the Greater Britain has any reality, we should endeavour from time to time to make the money we annually spend on the luxuries of foreign travel of benefit to those of our own Empire.

Medical men, and especially those whose work takes them in the direction of “ climate treatment,” may do much to promote

this truly national aim, if, before commending a patient to a foreign health resort, they think first, "Is there any haven of our own of equal value?"

I have recently published a paper* on Water Treatment, pointing out that the baths of England have equal virtue with those of many Continental spas; and it might be readily shown that England and her Colonies possess all, or nearly all, that can be needed by the health-seeker.

I am no "specialist" who thinks of nothing but chest disease. Every day brings me in contact with those who have "run down" from overwork, under-rest, or faulty adaptation of the human machine to its environment.

A sea voyage is well suited for those who are unequal to active exertion, and to the bustle of a crowded lodging in the country, or at the seaside, where a bevy of children or relations are always *en evidence* and preventing rest.

We are too prone to think that people with "nervous disorders" are not really ill, and to despise their ailments; and truly the physic they require is not an "alterative" to be purchased at the chemist's, but a change of scene and surrounding such as can best be found at sea. The melancholy patient is sure to find on board a mixed party of fellow travellers, with bright animal spirits and exuberant vitality. The fact that he cannot shut himself in his room away from society keeps him from *ennui*. He will soon be drawn out of himself, and on arrival in South Africa, or when he reaches home, his friends will hardly recognise him as the same. The short stay at the Cape will have added to value of the change and consolidated the benefit, and two months thus spent will do far more than could have been accomplished in the same time on the shores of England, or even among the Norwegian Fiords.

Remember, there are some to whom new life comes with active exercise on the moors or among the peaks, passes, and glaciers; and others who need rest and quiescence, and for whom the sea voyage or lying on the beach throwing pebbles into the sea is the desideratum. Those who need the first and choose the second, return from their holiday more oppressed than ever; and those who need rest and take violent exertion, return with a strained heart or over-distended lung. Change of work is good for some, cessation for others.

I cannot speak too highly of the comforts, conveniences, and courtesy experienced on board the "Castle" Steamers; and I hear that those of the "Union" Company are equally satisfactory.

* In *The Practitioner*, July, 1888.

On arriving at Cape Town, the splendid Table Mountain rises in front of us, with the town spread out at its base.

Not lingering, in the first instance, more than two days at Cape Town, during which I had time to make the acquaintance of a few of the principal inhabitants, I went on in the same steamer round the Cape to Mossel Bay, past the Knysna to Port Elizabeth. The proverbial roughness of the sea at the Cape of Good Hope, of which I had full experience, makes it desirable to go on in the larger boats rather than in the small Mail steamers which ply along the coast.

The Knysna district is, perhaps, the most beautiful part of South Africa. Its mountains and valleys, covered with varied vegetation, and peopled with large and small game, afford great attraction to the sportsman. Although the rainfall is greater than in the neighbouring parts, it is not excessive. The coast lands partake of the rather unhealthy character prevailing all round South Africa, but at an elevation of a few hundred feet and at a distance of twenty or fifty miles from the shore, these evil influences are lessened.

A plan is in contemplation for the development of this part of the Colony, and it is proposed to build an hotel and provide greater attractions for visitors than exist at present. The beautiful land-locked harbour is open to small Mail steamers, and the large vessels call at Mossel Bay, not many miles off.

Port Elizabeth lies in a deep bay, sheltered from all except S.E. winds, which, unfortunately, are at times severe and destructive, as was the case two months ago, when nine vessels were blown ashore. Thanks in a great measure to the energy of the Mayor, it has many evidences of prosperity, and has been called the "Liverpool of South Africa." Water has been laid on from a distance of thirty miles, there is a magnificent sea-wall and promenade, and the greater number of European inhabitants make it more enlightened, more cleanly and better paved than the other towns of South Africa. Not a tree will grow till the top of the hill is reached, where, protected from the sea breezes, vegetation is luxuriant around the villa residences of the wealthier inhabitants. In summer the climate is cool, and exposed iron rusts, as it does not in the interior.

From October to March the prevailing winds are S.E., blowing right into Algoa Bay, laden with saline moisture and accompanied by high solar heat, thus producing a "local climate" incompatible with the health and comfort of an invalid with bronchial or lung mischief. From April to August N.W. winds prevail, and the sense of oppression in breathing is relieved.

East London has a similar climate : landing is no longer a difficulty, and hence Queen's Town, King William's Town, Cathcart and Aliwal may be readily reached by railway. It is resorted to in summer by the King William's Town residents.

The temperature of the coast on the south and east is influenced by the Mozambique current, the effect of which is to make all the coast to the eastward of Simon's Bay warmer than that of Cape Town, just as the Equatorial current that impinges on the East Coast of Australia helps to make Sydney warmer than Adelaide.

Grahamstown (1,800 feet) is beautifully situated within thirty miles of the sea, although more than 100 miles distant from Port Elizabeth, from which it is reached by railway. The rainfall is fairly and equally distributed throughout the year, and is not limited, as in so many other places in Africa, to a few thunderstorms in summer. The temperature is remarkably equable.

It is sheltered from the strong winds which render Port Elizabeth undesirable for invalids, and has a delightful climate both in summer and winter. With the exception of the suburbs of Cape Town, it is unquestionably the most pleasant place to live at in the Colony. During my stay there, at the end of winter, the nights were cold—mean 42 degs. F.—but during the day the shade temperature rose to 75 degs. The atmosphere is distinctly less dry than that of Bloemfontein, the rainfall is distributed throughout the year, and excessive dryness is less complained of at Grahamstown than in many other parts.

Grahamstown has been described as the "Winchester" of South Africa. Its ecclesiastical and educational advantages are great; the intellectual and social activities of the place are much like those of an English cathedral town, and any person of culture would find in its public buildings, gardens and surroundings, much to interest and divert. It is situated in the most productive plateau of the Colony, close to the watershed of three river systems; its genial climate, fruitful soil, cheap living and easy access by rail to the coast, to the bracing mountain air, or to the dry inland plains, make it a desirable sojourning-place for the invalid.

The air is bright and exhilarating. The mean annual temperature is 60 degs.; in summer 63 degs.; and winter 53 degs.; mean range, 15 degs. (17·7 degs. in summer, and 12·8 degs. in winter); an annual rainfall of 22 inches, distributed over 84 days. The rainfall occurs chiefly in summer, and so down the temperature, and secures remarkable equability.

The Eastern Province, of which Grahamstown was formerly the capital, may be thus divided : (1) The coast plateau, warm, genial and equable ; (2) a midland terrace, from 1,000 to 2,500 feet elevation, cooler, drier, and more genial ; (3) a mountain climate, from 2,500 to 5,000 feet, still drier and more bracing, with greater extremes—hot days, cold nights—the range of temperature being double that of the coast lands, Cradock and Aliwal North may illustrate the high plateau, Grahamstown and King William's Town the intermediate one, and Port Elizabeth and the Cowie the coast.

King William's Town (1,273 feet) is decidedly hotter than Grahamstown, but otherwise the climate is similar ; the social interests are less ; and the elevation, geographical and ecclesiastical, is less also.

Port Alfred, at the mouth of the Cowie River, 44 miles by railway (again in use) from Grahamstown, is a pleasant place of seaside sojourn during June and July, but is unsuited for cases of phthisis.

Graaff-Reinet (elevation 2,463 feet) is an exceptionally hot place in summer, but may be recommended in winter, as being accessible by railway, and having a competent medical man.

The climate of Queenstown (3,500 feet elevation), on the line between East London and Aliwal North, is thus described :—"The mean temperature of the four hottest months (November to February) is 69 degs. ; of the four coldest (May to August), 52 degs. The night temperature is seldom high ; 10 degs. of frost may be looked for on two or three mornings every winter. The frosty mornings are followed by glorious days. Only on quiet and cloudless nights does dew fall, and the peace and clearness abide, while the brilliant but no longer scorching sun does his daily journey. The rainfall during the five months from May to September is only three inches. Heavy thunderstorm rains fall in summer, leaving the sky serene, followed by calm nights. This is an admirable place for consumptive cases."

Aliwal North (4,348 feet), the northern terminus of the Eastern Railway, is 280 miles distant, and may be reached in twenty-four hours from East London ; or the Eastern Railway may be reached from Grahamstown or Cradock in a day's drive. It has two fairly comfortable hotels. Houses are to be had, and rents are low. It is a large village on the Orange River, which runs rapidly after rain, and is never dry ; for nine months in the year, it is but a stream running in a deep bed. The air is dry and cool, like that of Cradock, but the extra elevation makes it more bracing. A patient, whose disease was arrested at Grahamstown, has been able to carry on his work

assiduously and without break since living at Aliwal. In October last he wrote: "The winter has been splendid; at night sharp frosts, the days bright, dry, and crisp. The spring rains come down in two or three days, the weather has been perfectly dry since." The Doctor observes that dark-complexioned people do badly, but that the climate of Aliwal suits blondes!

Aliwal is beyond doubt one of the most valuable health resorts of South Africa for phthisical patients. Until the railway is completed which is to connect the East and West provinces,* the greater accessibility of Cradock is likely to make it more popular. Aliwal, however, as being on the line of railway from East London, is more easily reached than Bloemfontein, which is likely to remain for years beyond the reach of the "iron horse." The Boers of the Orange Free State or of the Transvaal prefer to make money by transport, and are slow to allow the access of the rail.

Tarkastad (4,280 feet), midway between Cradock and Queen's Town, is superior to many other health stations, inasmuch as it is not shut in by hills, and has constant breezes to cool the air. It is in the midst of a fertile region, surrounded by large farms mainly occupied by Englishmen, the Golden Valley Farm being among the most beautiful in the Colony. It has, moreover, an exceedingly comfortable hotel—Passmore's—managed by an English lady. There are two capable medical men, and it is much resorted to by invalids who find Cradock, Queen's Town, or King William's Town too hot. There is no time in the year in which it is unpleasant; the summer thunderstorms freshen the air when tending to sultriness. The baths in the hotel are well arranged, and very refreshing after a day's shooting or a long drive. Tarkastad is reached by a five hours' drive from Cradock (180 miles by rail from Port Elizabeth), over beautiful country, which, on leaving Cradock, becomes more grassy, the Karroo bush being superseded by a richer vegetation; yet the air and soil are so dry that a knife left on the veldt for a year or two does not become rusty. If approached from East London, the distance to Queen's Town is 154 miles, whence it is a five hours' drive to Tarkastad. The fact that it is off the line of railway makes it superior to more accessible places, where the temptation is great to be fitting constantly from place to place, and thus losing the benefit which in chronic cases can alone be secured by patient continuance for many months in health-giving air.

* This line is approaching completion.—E.S.T.

Dordrecht (5,200 feet), nearly 1,000 feet higher, may be resorted to for a few weeks in midsummer, but it is less attractive than Tarkastad, and patients do not so willingly remain there long enough to gain permanent benefit.

Burghersdorp (4,650 feet), the chief town of the eastern division of the Karroo, has been recommended by Dr. Kanne-meyer specially on the ground that it is within easy access of places 1,000 feet higher, and 1,000 feet lower elevation, thus affording the opportunity of readily changing the climate at different times of year. To quote Dr. Kanne-meyer's description of the climate of Burghersdorp, "The summer months are hot and relaxing during the day; the midwinter nights are cold. During the rest of the year the weather is temperate and delightful; the sun is rarely obscured, never for a whole day, mostly and gratefully by thunderclouds during the hot summer afternoons. We live practically under a cloudless sky. Our principal rainfall is in summer—sharp, short, and refreshing thunderstorms. The range of temperature in summer is high on the plains. In the Stormbergen Mountains it is more equable, the heat never oppressive during the day, nor are the nights cold; and there is more verdure and humidity. In winter the days are cloudless, rainless, sunny and very dry on the plains. Between sunset and sunrise the air is very cold and frosty. Snow is rare. The mountainous parts are cold and comparatively damp, frosts heavy, and snow falls occasionally. Mists or fogs are unknown on the plains; in the mountains they occur frequently."

Phthisical cases do better at Burghersdorp than at Bloemfontein.*

Before returning to Cape Town, a few words must be said of Cradock and Beaufort West, Fraserburg, Hanover, and Ceres.

Cradock (2,850 feet) is accessible by rail (180 miles) from Port Elizabeth, and is regarded in the Colony as one of its principal health resorts. Although apt to be dusty during droughts, it has a good all-year-round climate. It is more accessible than Aliwal or Bloemfontein.† Its rainfall is small, occurring only in the form of summer thunderstorms. The

* Middelburg supplies fair accommodation, and there are elevated parts in the district that have proved havens for the restoration of several patients. Molteno is also highly praised.—E.S.T.

† The Railway is now open to the Capital of the Orange Free State —E.S.T.

humidity is 62 per cent. ; the average summer maximum temperature is 91 degs. Although the days are hot the evenings are cold. The dryness of the atmosphere makes it easy to bear the heat. Asthma is unknown there.

The elevation of Beaufort West—readily reached from Cape Town or Port Elizabeth—is the same as that of Cradock. It is half-way between Cape Town and Kimberley. Trees grow along the streets, and the appearance of the town is more attractive than that of Cradock ; but those compelled to stay there for months are apt to mope in either. It is, however, a very good stopping-place on the way north.

Hanover, 9 miles from Hanover Road Station, 300 miles from Port Elizabeth, and 539 miles from Cape Town (elevation 4,600 feet), is dry and bracing ; the winter climate is compared to that of the South of France ; the summer is hot, evenings cool ; rainfall 10 inches. The scenery is described as pretty, but it partakes of the arid Karroo character. Cases of phthisis and bronchitis in the young and middle-aged do well. Pneumonia, however, is common.

The district around Hanover is available for those preferring to lead an agricultural life or for sheep farming.

Fraserburg, 360 miles from Cape Town (4,500 feet elevation), is barren. "Periodical rains" relieve monotony. The winds are strong, the air dusty. Both summer and winter are severe—summer, 100 to 110 degs. in the shade ; winter 24 degs. Rainfall, 2 to 4 inches. Railway station 10 miles off.*

Ceres (1,700 feet), 10 miles from Ceres Road Station, which is 85 miles from Cape Town, occupies a beautiful position, and is a very suitable place in which to spend a few weeks before deciding on a more settled home. In elevation it is similar to Grahamstown, but the climate is much more humid, especially in winter. Ceres possesses the great advantage of a comfortably-arranged sanatorium or hospital, available for invalids, under the highly-competent supervision of Dr. Kahn. The streets are well laid out with boulevards of oak trees. A river runs through the town, with well-protected bathing places. The soil is sandy ; the air is dry in summer. Ceres is sheltered by mountains from the S.E. winds, which often render Cape Town and its vicinity trying. An elevated plateau, 2,700 feet high, is reached in a two-hours' drive, having a beautifully cool, dry summer climate, but from May

* Matjesfontein, accessible after a night's journey from Cape Town, affords a ready means of testing the effects of the Karroo climate in a doubtful case. Comfortable hotel accommodation is provided.—E.S.T.

to August strong N. and N.W. winds prevail, and thunderstorms are frequent. The highest recorded temperature was only 84 degs., and the lowest night temperature 50 degs.

It was my hope, when visiting South Africa, that I might be able to hold it out as a country in which many Englishmen with damaged tissues or hereditary taint might hope to settle, with a prospect of health and affluence. So far as climate is concerned, I am not disappointed. I regret, however, to have to confess that in the present state of financial depression, when men and money have poured into the Transvaal, this is not the case. As regards the highest class of patients, whom we see in town and country living with every comfort and luxury, we could not venture to send them to a country where the hotel accommodation is so deficient.

The hotels in South Africa are, for the most part, unsatisfactory. The attendance is bad, and the conveniences few. The number of patients going to South Africa is comparatively small, and quite inadequate to fill the various competing health resorts. It would be well if the patients could be all concentrated in one or two, and an enterprising hotel manager, willing to lay out capital in order to provide the necessary comforts, could be found.

At Grahamstown and King William's Town (called "King") the comforts and luxuries of life are as fully attainable as in any other part of the Colony, except the suburbs of Cape Town (which are too humid in winter), or in Kimberley.

As regards the class of clerks, warehousemen, journeyman tailors, &c., it is difficult to promise employment. As to professional men—whether architects, engineers, lawyers, doctors, or clergymen—there is always scope everywhere for really able men. Those who have held their own in the midst of the competition of the Old Country are sure to make a position for themselves in a community where the number of really eminent men is necessarily limited.

Open-air occupations are at present few, but as the unhealthy mania for gambling in gold and diamond shares, which is the curse of South Africa, is replaced by patient plodding work on the land, the country will speedily change its aspect. A friend and patient of mine—Mr. Irvine, of King William's Town—showed what care and wise outlay could do in converting a desert into a modelled farm—full of flourishing fields, plantations, gardens—and thus setting an example which might be advantageously followed throughout a great extent of barren country.

Such efforts as these increase the value of South Africa as a health resort by reducing the excessive dryness of the air and

soil, and by giving something for the eye gratefully to rest upon, and thus rendering those contented who, without anything of beauty to look at, would soon escape to more attractive lands.

Cape Town, notwithstanding the fact that it is the capital, the seat of government and the largest town in South Africa, is, from a sanitary point of view, in a truly disgraceful condition. The European population has deserted the town in favour of the suburbs. The Governor and the General, who are obliged to be in residence for part of the year, escape to Wynberg whenever it is possible. The efforts at drainage hitherto made have turned the bay into a sewage outfall: the breakwater having prevented the "scour" of the tide, the matters brought down by the drains undergo decomposition, poison the air and develop endemic disease. Until this state of things is remedied it is our duty to see that invalids are not tempted to remain in the city.

When at Cape Town, an opportunity was kindly afforded me of meeting the members of the "South African Medical Association," to discuss questions connected with the climate.

More than twenty members of the Society were present, representing various parts of the Colony, and, in the discussion that ensued, very interesting statements were made and important generalisations arrived at.

A series of papers (33 in number) were placed in my hands, prepared by the medical men of the various districts of the Colony, containing a mass of information, from which I was allowed to make extracts. These papers were drawn up in answer to a series of carefully-prepared inquiries with a view to obtain definite information on climate, elevation, water supply, &c., together with references to cases of disease treated in the several districts.

Time and space make it impossible to do full justice to these communications here, but I have endeavoured to classify them according to the different areas, some of which are of great elevation, some low-lying, some humid, and others exceedingly dry. I have already described, in as few words as possible, some of the typical places mentioned in these reports, and will now pass to a comparative survey.

Dryness and clearness are the chief characteristics of the air, due to the fact that rain falls at long intervals, and the greater part of the country is glazed with baked clay, from which the water runs off as fast as it falls; there is nothing to retain the moisture, or allow it slowly to filter into the earth; this, though bad for agriculture, is good for those for whom a dry, *rarefied air is essential*.

The rainy season occurs in winter in the West and in summer in the Eastern Province, so that the wet season may be easily avoided by travelling from one part of the Colony to another.

The three winter months are exceedingly trying in the high, exposed parts, for the houses are built without fire-places, and coal and wood for fuel are almost unobtainable, dried cowdung doing duty for peat, as well as for cement for flooring and stucco for the walls.

The mean temperature of the Cape Colony is 63 degrees, about the same as that of the Riviera, of Sydney, Melbourne and Adelaide. On the coast lands the mean summer heat is 68 degs., and in winter 56 degrees.

That the climate is favourable to the growth and development of "*genus homo*" is shown by the fact that the descendants of the early Dutch settlers, who have been in the Colony for 200 years, are amongst the largest and most robust of men. It is not unusual to see men from 6 feet 4 inches to 6 feet 6 inches—not lanky, weedy, or ill-grown, but with bone and muscle more than proportionate to their height.

Army statistics show that the Cape and Australia are the most salubrious stations in which the British Army has been stationed. Before the Suez Canal was opened, the Cape was recognised, and justly, as being the sanatorium for broken-down Indians.

The climate of the coast lands—that, for instance, of the suburbs of Cape Town—has been compared to that of Madeira. At Wynberg, Rondebosch, and Kalk Bay the air is clear, bright and sunny in summer, but in winter overcharged with moisture. It proves enervating to residents, who in a few years are apt to lose physical and intellectual energy. The heat too is great in summer.

At Kimberley the mean temperature is 70 degs. in summer and 50 degs. in winter, whilst in London it is 64 degs. and 37 degs.

The winter is short and mild, the heat of midsummer is more intense than that of July and August in England, but so dry, rarefied and buoyant is the atmosphere that the men work all the day with ceaseless energy and activity notwithstanding the high temperature, which in December, January and February rises frequently to 104 degs. or 105 degs.

Much consideration is needed for the selection of the district suited for each case, and it may be wise to obtain advice, after arriving in the Colony, as to the best places at which to stay at different times of the year. Happily, there are highly competent men at Cape Town and in the Eastern Province ready to give the needful counsel. Some general principles,

however, should be recognised before leaving home if our patients are to gain the fullest benefit, although each individual case requires, of course, special consideration and guidance.

The Eastern Province supplies to non-tubercular cases very many advantages, especially in Grahamstown and King William's Town.

The Karroo district, in which Aliwal, Beaufort West, Colesberg, Cradock, &c., are situated, may be reached from Cape Town or Port Elizabeth in a few hours, and will prove a haven to an ever-increasing number of health-seekers, whilst the Upper Karroo and more elevated plateaux of the interior give scope for the energies of those who, having regained health in the Karroo, desire to secure wealth in the gold fields or diamond mines of the Transvaal or Kimberley.

This extensive district, which occupies some 18,000 square miles, owes its name to the presence of the Karroo bush, which dots the whole area and affords food for millions of sheep, who find in its young shoots a highly fattening food.

Spring and autumn hardly exist in the Upper Karroo plateau. Summer begins suddenly about September, increases in intensity till January, decreases till the end of April. Dry, warm winds, sometimes dust-laden, prevail during the day, with cool, invigorating breezes at night. Thunderstorms are common in midsummer (Christmas time), accompanied by rain or hail. These summer thunderstorms infuse new life into every living thing; before these refreshing storms occur, the heat is often oppressive, and the thermometer ranges as high as 110 degs. F. in the shade; but owing to the dryness of the atmosphere, the gentle currents of air, and the cool evenings, it is not very oppressive. In winter the air is dry, clear, sharp, and delightful, but very cold, often frosty, at night.

The inaccessibility of this region has made it less known than it deserves to be. Now that the diamond fields have opened up the country, comfortably appointed express trains on the American system, having sleeping cars and dining cars, and every convenience, rapidly convey the traveller to places where he can spend the summer and winter months respectively under conditions calculated to secure benefit with the least possible risk. The towns and villages on the Karroo become tree-clad and attractive if the water supply is adequate for irrigation; without this they have a dry, desolate aspect.

The great heat of the sun in the shadeless regions of the Cane Colony can be borne without injury; the air being pure, *and generally in motion*, sunstroke never occurs. A lower

shade temperature where the movement of the air is less, and evaporation, with its cooling tendency, is checked, cannot be so easily borne. A shade heat of 90 degs. F. is overpowering to those who can sustain prolonged hard work in a sun heat of 120 degs.

The general conclusion to which the evidence points is that for phthysical cases the Karroo climate supplies all the desiderata, but that the comforts and conveniences of home are here still deficient, and that even where they are to be found there is a want of that incident and variety so important to every case.

Those to whom the delicacies of home life are essential may find the monotony trying, and the coarse conditions of life intolerably irksome. A continuous residence is needed for cure in chronic cases, and no one should attempt such a life who is not content to put up with many inconveniences, and to renounce most of the refinements and avocations of English town life. To many persons, however, the free and easy mode of existence becomes so pleasant that a return to city life is viewed with regret. There is variety for sportsmen, and those who enjoy riding and hunting the four kinds of buck found in the district.

Experience shows that tubercular phthisis is almost unknown in many parts of the Karroo.

Strong and healthy people notice a diminution of appetite and activity at an equable high temperature; whereas weak persons live and flourish in warmth and sunshine, and manifest greater energy of mind and body, and less liability to disease, than in cooler and more variable regions suited to the strong and healthy. Conversely, cold climates are well borne by the sturdy, though trying and perhaps destructive to the delicate or ailing.

If the invalid determines to spend the summer in the lower Karroo, or, indeed, in the central or higher Karroo, he must be content to pass the day under the verandah of the house, or in a hammock slung under the trees. The houses are kept cool by closing doors and windows in the early morning; such a close, fusty air is of course quite unsuited to those with chest disease.

As might be expected, the general consensus of opinion points to the conclusion that continuous residence for a series of years is necessary to establish cure in cases of extensive or advanced disease, but that in incipient cases and those of threatened disease a short residence often secures speedy improvement. But suitable hotel accommodation must be provided.

During thirty years of practice I have had ample means of

judging the results of climate treatment in New South Wales, Victoria, New Zealand, and Canada. I have found these Colonies prove of essential service to many. I feel satisfied, however, that South Africa, from its accessibility, its dryness, elevation, and other peculiarities, is specially adapted to others. At present it is better fitted for those who are prepared to be pioneers.

It must be remembered, in making a comparison between the Australian and South African climates, that whilst the latitude of Sydney corresponds with that of Port Elizabeth and Cape Town, there is no part of South Africa in so low a latitude as Melbourne or even Adelaide.

The mean temperature of Cape Town is 61.3 degs. F., of Melbourne 57.2 degs., the same as Bathurst, which is 2,150 feet above the sea; Washington is 56.9 degs., Bordeaux 57.0 degs., Marseilles 58.3 degs., Sydney 62.5 degs., Adelaide 64.6 degs., and Perth (W. Australia) 64 degs.

Whereas the rainfall of Cape Town is 24 inches, that of Sydney is 50 inches, of Perth 28.9, of Melbourne 25.46, Ventnor 25.5, London 24, Paris 22, and Adelaide 20.

The elevation of Cradock and of Beaufort West is only 2,800 feet, yet this has proved sufficient in many cases of phthisis. It is difficult to understand that this should be the case without personal experience of the remarkably dry, clear, and healing atmosphere.

In cases of contracted lung after pleuro-pneumonia, collapse after whooping cough, or in cases in which the expanding effect of rarefied air is required, a higher altitude, like that of Aliwal, Tarkastad, or Johannesburg is requisite.

Experience is required also to determine in each case whether (a) it is best to accustom the patient to the dry air of the Karroo at a moderate elevation before making trial of the higher altitudes, or (b) whether the higher elevation should be first sought, and then a settled home be found at a moderate elevation, *e.g.*, 1,700 feet above the sea.

I have known good results follow from a sojourn in the Eastern Province of the Cape Colony during the winter, and then, taking ship for Sydney, settle in the Riverina, between the Murray and Murrumbidgee Rivers, at an elevation of some 1,200 or 1,500 feet.

In a communication of this kind it is not possible even to indicate the conditions which guide the physician in formulating a plan for a given case. For instance, I have just advised a patient to seek, first, the humid atmosphere of the tropics; then, an exceedingly dry and elevated climate; and afterwards, a life-long sojourn in a variable climate, like that of

New Zealand; for a very long sea voyage would certainly have been harmful, and a long stay in the Karroo will probably not be required.

This is not the occasion for details as regards rainfall, thermometric observations, wet and dry bulb readings, force, prevalence, and direction of winds, &c. These facts are recorded in the annual reports of the Meteorological Commission. I have prepared from these reports a table giving the annual rainfall in inches and the number of days on which rain fell—for the value of the first without the second is greatly lessened. From these it will be seen how much places near together vary in this respect, though no diversity is so marked as that in the immediate vicinity of Cape Town, where it will be seen that the rainfall at Cape Town Castle is 21.74, at Wynberg 43.40 (ten miles off), and at Bishop's Court, 56.65. The last is situated half-way between the other two, but the position of Table Mountain determines the rainfall in either case.

Some of the diagrams exhibited have been kindly lent for the occasion by my kind friend Sir Charles Mills, the Agent-General of Cape Colony, to whom our best thanks are due.

The series of framed drawings, thirteen in number, show the rainfall for each month in the year, and for the whole year; from which it will be clearly seen that the winter rainfall about Cape Town is high, whilst in the Eastern Province the winter is dry, the rainfall occurring only in the summer months.

The large coloured diagrams show exactly the distribution of rain, month by month, at Cape Town, Wynberg, and Ceres, with the almost rainless Pella in the N.W.

Compare those in which the winter rains are heavy, with the diagrams of the Eastern Province, which clearly exhibit the fact that at Aliwal and Colesburg the rainfall in winter is almost *nil*, whereas in summer it is considerable.

At Graham's Town and Port Elizabeth it will be observed that the rain is fairly distributed throughout the year. This may seem to be a disadvantage, and really is so, in those cases of lung disease in which an absolutely dry climate is the great desideratum. It may, however, be noted that in a region the chief evil of which is its excessive dryness, the free distribution of rain throughout the year in certain cases adds greatly to the picturesque appearance of the country, and thus to enjoyment.

The table shown in Appendix, which gives the altitude and rainfall of certain selected resorts, with column stating the number of days on which rain falls, is an important point for consideration in judging of climate.

I am saying but little about Natal, having written much about it elsewhere. The climate is good for persons with complaints of the throat and chest, those liable to bronchial affections in England being surprisingly free from them at Maritzburg; it is somewhat too relaxing, and the sudden changes in summer, as the moist sea-breezes or dry land-winds prevail, are apt to try those with irritable nerves.

Durban has greatly improved of late. The country rises gradually until the elevated plateaux of the Orange Free State and the Transvaal are reached. These are very dry and salubrious, and will, doubtless, come into favour again.

The excessive native population of Natal will necessitate firm and wise government. In Natal, however, and indeed throughout South Africa, there is no need for the invalid, or even for the Colonist, to do any hard manual work, for the native population is large, and the Kaffirs are ready and able to work.

On leaving Natal for the open, dreary, desolate Orange Free State, great changes take place in the climate and vegetation; many parts of this now deserted region bear evidence of having been at a distant time densely populous; remains of stone-built villages, with pottery, are found in the gold-bearing districts of the Transvaal and Matabeleland.

Bloemfontein (4,500 feet), since attention was drawn to it (see paper, R.M.C.S. Trans., vol. lvi.), has proved of essential service to many. Still more favourable health resorts are now opened up, which were inaccessible for invalids before the discovery of gold and diamonds rendered means of transit comparatively easy. Speaking generally, the Orange Free State is dry and cold in winter: its average elevation is nearly 4,500 feet. It is less rich in vegetation and in mineral wealth than the Transvaal. Well-appointed coaches now leave the railway terminus at Kimberley on the arrival of the mail train (32 hours from Cape Town, and 27½ hours from Port Elizabeth), those carrying the mails accomplishing the distance to Johannesburg in 57 hours. It will not be long before the railway will be pushed on, and this weary journey be materially shortened.

The sanitation of Bloemfontein is bad; fever, dysentery, and diphtheria prevail. Ladybrand is free from these defects.

The natural seaport for the Gold Fields, which is only 115 miles from Barberton and 346 from Pretoria, is Delagoa Bay. The railway thence into the interior is now completed for 55 miles, and may possibly be extended. Delagoa Bay is unhealthy in summer, and is at present marked by that stagnation *which may be expected* under Portuguese rule.

When the line is worked by an English or Transvaal Company, obstructive influences will be removed, and there is no reason why Pretoria should not be reached in a day from Delagoa Bay—the natural port in South-East Africa.

Johannesburg (5,000 feet), 285 miles from Kimberley, the present railway terminus,* can be reached by coach in 57 hours. To an invalid this drive is so exhausting that it should not be undertaken. The slow coach, which stops for a few hours each night, is not so well appointed, and is likely to prove even more fatiguing than the fast one. The mud is often more than knee-deep, and even 36 oxen may prove insufficient to get the vehicle out of the mire. The crowding is always great, and the discomfort hence arising excessive.

The climate is beautiful, and the soil is only dusty in the town, or where the traffic is great. During the summer months, however, the air is saturated with moisture and very trying, and during the winter the nights are bitterly cold.

Quarters are so dear that the visitor must be satisfied with a room which would not content him elsewhere, and club life is naturally expensive where the distance and cost of transit are so great.

One day, when railway communication is completed, and when quarters are good and reasonable, and when the "gold mania" is in a less acute phase, this may perhaps prove a more valuable health resort, but at present it is unsuited for health seekers, and must be left to those who are searching for wealth.

The proverbial unhealthiness of Delagoa Bay, and the whole seaboard from thence to St. Lucia Bay, is dependent on rank grass and humidity of the air and soil. Ten years ago Barberton had the reputation of being at least as fatal to the settlers as Delagoa Bay. Now, thanks to the march of civilisation, to the cutting down of trees, and especially to the burning of rank grass, it has become healthy.

Pretoria, the capital of the Transvaal (elevation 4,000 feet), is said to be an exceedingly attractive place. It is well sheltered, and in summer decidedly hotter than Johannesburg; but scarcely hotter than the hot days of our English summer, and decidedly less hot than Paris.

In the summer months the hills, which rise to a height of 8,000 feet, are covered with mist, yet the whole region is healthy.

In Bechuanaland the elevation varies from 4,000 to 6,000 feet. More rain falls than in Cape Colony. Wheat, barley, oats, &c., grow readily in the beautiful valleys, but it is found

* The railway is now (August, 1891) extended to Vryburg, whence Johannesburg can be reached by coach in 36 hours.—Editor.

that irrigation is apt to breed fevers ; the gardens are therefore kept at a distance from the houses. Above the level of 4,000 feet the immunity level is reached, and the risk of fever and phthisis is greatly diminished. Should the proposed Bechuanaland Railway be pushed forward,* it will open up a country having a fine climate and great possibilities of expansion.

Experience now being gained in Tropical Africa confirms that acquired in India in regard to the immunity level.

In the Neilgherries the immunity level from fever is 4,500 ft. In the latitude of Bechuanaland it must be at a level considerably below this, say 4,000 ft.

The fever is not limited to the oozy, jungly, saline marshes north of Delagoa Bay, but is found too in dry arid tracts where the rainfall is slight, where there are no swamps or signs of superficial moisture ; there may, however, be, as in India, areas of damp subsoil without drainage in which solar heat leads to the development of malarial poison ; the turning up of such ground produces an outbreak of fever, but when the drainage and cultivation are completed the unhealthiness is removed.

Anyone settling in the sub-tropical or tropical regions of Africa should master and act upon the rules found needful in other malarious lands, or he will lay his bones beside those of many pioneers of civilisation who would not have died had they followed out wise precautions.

For instance, the rainy season and the still more sickly drying-up season should not be spent in malarious districts. The first clearance and digging-up of virgin soil should be performed by those already acclimatised. Malaria being most potent near the ground, and specially when the sun has just disappeared below the horizon, it is important to sleep well above the ground. Houses should be constructed with sleeping-rooms in an upper storey, the windows being closed at night. The diet should be nutritious. Drink very temperately used, if at all. Exercise, taken early, should be preceded by a cup of chocolate, tea or coffee. Protection of the head and neck from the sun should be adequate, drinking water boiled and filtered, and two grains of quinine taken night and morning.

Directions such as these, which are based on Sir Joseph Fayrer's experience, will do much to lessen the dangers of ague and fever.

In the first two or three years after breaking up and cultivating virgin land it is important not to live in the midst of

* This railway is already completed to Vryburg and is in course of construction as far as Mafeking (August, 1891).—Editor.

the land; and if it is proposed to irrigate the garden, the house should not abut upon it, but should be placed to the windward of it, or a belt of Eucalyptus should be planted between the house and the irrigated fields. Such a belt acts as an effective screen, just as a gauze mosquito curtain may keep the malaria from one sleeping in the jungle.

The Eucalyptus grows readily after the first year or two, during which it needs attention if the season is unfavourable.

The Forestry experiences of South Africa are such as to encourage great development. A wise outlay would change the face of the country, as it has done in the neighbourhood of many of the towns. In this respect Grahamstown is a model. The annual "tree planting," when every child plants a tree (the *Pinus insignis*), is an institution which might be copied in many a neighbourhood with great advantage to the climate, as well as to the beauty and attractiveness of the place.

Stinkwood—the "teak of South Africa"—is a most valuable wood. [Specimen.]

Ironwood has been found by Sir John Coode of great value for piles driven under water-mark.

Bechuanaland and the protected districts extend to the Zambesi. The greater part of the district is suited for pasture; many of the natives wear European clothing, and show a talent for carpentering and mechanics, and the climate is said to be almost perfect. No frost in winter; rain is rare between April and October. Children may be reared as high as the Zambesi latitude (18 degs. S.)

It is curious to note that, under the influence of alcoholics, some of the native races of a low type are dying out. But the Zulus are a powerful race, and resist the access of disease.

Leprosy is said to be spreading among the coloured population in various places.

A peculiarity has been noted in the climate on the Limpopo at an altitude of 2,880 feet, where the road from Pretoria to Khama's country crosses the river. Whilst the sun is hot—99 degs. in the shade—cold blasts of wind, having a temperature of 70 degs., occur every four or five minutes. Rheumatism is very apt to be thus caused, the moist skin being dangerously chilled by the cold blast.

In the neighbourhood of Lake N'gami, at an altitude of 2,813 feet, lat. 21 degs. S., the sickly season prevails from September to May, when it is wise to avoid this region.

At the Victoria Falls, on the Zambesi, the river is about a mile in breadth; although the elevation is 2,580 feet above the sea, it is unhealthy during the summer.

Considering the great importance of this region as a valuable field for emigration and for trade with the interior, it is important that further information should be obtained as to the climate, the means of maintaining health, the time of year at which it should be avoided, &c.

Mission and other stations now extend from the River Congo on the west to the stations of the East African Company on the Great Lakes, and so on to Zanzibar.

The interval between the Victoria Falls and the sources of the Zambesi and of the Congo, which lie side by side, is being rapidly bridged, especially by the marvellous energy of Mr. F. T. Arnot. A railway, as proposed, to Stanley Pool would make the 1,200-mile waterway of the Congo accessible. Another short railway will eventually connect the Congo near the Stanley Falls with the Lake system of the interior, thus linking the east with the west; whilst much will be done to connect the north and the south when the Cape Railway is extended to the Zambesi.

Passing northward of the Zambesi, only the lower parts of whose course are known to be very unhealthy, and to the north of the Island of Zanzibar, we come to the region recently acquired by the Imperial British East African Company, which has rights extending over a section of Eastern Equatorial Africa, between the coast and the Victoria Nyanza Lake, a territory of 67,000 square miles—three times as large as Natal. It is bounded by mountains Kenia and Kilimanjaro, upwards of 19,000 feet in height, with high, cool plateaux forming a large proportion of the country, and affording districts endowed with a temperate climate and temperate flora, well watered, richly wooded, and offering most suitable localities for European settlers. This country is described by Mr. H. H. Johnston in the October number of *The Fortnightly Review* in a way to attract all who read it. It is the finest botanical and zoological garden in the world, and might become the granary of the East.

Large areas in these districts have a European climate, superior in salubrity to many parts of the Continent—the average night temperature in the hilly districts being 60 degs., and in the plains 68 degs., and the greatest heat registered 81 degs.

The seasons are regular; from June to October no rain, from November to May an abundant rainfall.

At an altitude from 4,000 to 8,000 feet, the climate is described by Mr. Johnston as like a Devonshire summer, becoming cooler the higher you go.

Again, Bishop Hannington, when crossing the Equator at

an elevation of about 5,000 feet, remarked : " The valleys and grassy or heathy downs are very like Devonshire. Above 6,000 feet the tangled forest begins, with dense—almost impenetrable—undergrowth, which clings to the mountain to the height of 9,000 feet ; Kilimanjaro, rising to a height of 19,000 feet, looks lovely in the evening light."

The population around the Victoria Nyanza is very dense, and is estimated at from 10,000,000 to 12,000,000.

Dr. Livingstone, speaking of the high, dry country of the interior of Africa, says :— " It is the complete antipodes to our cold, damp English winter. Not a drop of rain ever falls between May and August. Damp and cold are never combined ; the atmosphere never has that steamy, debilitating effect so well known in India and in parts of the coast region of South Africa. You may sleep out of doors with the most perfect impunity."

There is, however, a dark side to this picture. Central Africa is dotted with the graves of missionaries—devoted men, who have striven to take the Gospel into the heart of the great Dark Continent, and have perished in the attempt. Let us not regard them as a failure but as the leaders of a "forlorn hope," beckoning us onward and upward to victory and to triumph.

Professor Drummond, in his recent work on *Tropical Africa*, writes : " The physical features of the great continent are easily grasped. From the coast, a low, scorched plain, reeking with malaria, extends inland in unbroken monotony for 200 or 300 miles. This is succeeded by mountains slowly rising into plateaux some 2,000 feet or 3,000 feet higher, and these, at some hundreds of miles distance, form the pedestal for a second plateaux as high again.

" This last plateau, 4,000 feet or 5,000 feet high, may be said to occupy the whole of Central Africa. These plateaux are but mountains and plains, covered, for the most part, with forest.

" The Zambesi drains an area of more than half a million square miles, and, like the Nile and other African rivers, its reaches are broken by cascades and cataracts, marking the margin of the several table lands.

" Africa rises from its three environing oceans in three great tiers ; first a coast line, low and deadly ; further in a plateau the height of the Grampians ; further still the higher plateau, extending for thousands of miles, with mountains and valleys. Cover the coast belt with rank, yellow grass, dot here and there a palm ; clothe the next plateau with endless forests, with low trees, with half-grown trunks and scanty leaves, offering no shade.

"As you approach the Equator, Central Africa becomes cooler, because the continent is more elevated in the interior, and there is more aqueous vapour and cloud than in the more southern lowlands.

"The climate of the equatorial zone is here, as elsewhere, superior to that on the borders ; at night it is cold, two blankets being needed. The shade thermometer rarely reaches 95 degrees."

The foliage in the tropical regions is luxuriant; in the southern parts of the country the flora is remarkably distinctive. Trees are specially deficient. Each species is as a rule limited to a small area. Foreign plants are very slow to become acclimatised, many plants remaining for five, seven to ten years in a dormant state, and only flower when rain and temperature coincide with their requirements. A region generally devoid of vegetation may after rains spring into wonderful luxuriance.

At least one-third of the flowering plants are succulent, and there is a marked prevalence of thorny plants.

The mention of flowering plants reminds me that I am digressing from my subject, which is Southern, rather than Central Africa—a digression which I hope my hearers will forgive, considering the special interest at this moment attaching to Tropical Africa, not alone from its political, but from the human interest attaching to the loss of Colonel Barttelot, and we may fear also to that of Stanley himself.

In Cape Colony there are millions of acres of land lying waste and barren for lack of irrigation and improved methods of farming. An infusion of European energy and capital will do wonders, and there is good reason to hope that in Bechuanaland a fresh plantation of European settlers will soon take place, and that in a few years this fertile country may have undergone such development as to make it a haven of refuge for health-seekers as well as agriculturists.

The time has not yet come for a consolidation of the various Colonies, but the solidarity of South Africa is worthy of the consideration of our statesmen, and will one day—let us trust by pacific means—be accomplished. Cape Colony comprises 240,000 square miles. If Bechuanaland is added to this, a territory is formed 420,000 square miles in extent—twice the size of France—having a population of 1,800,000, and a capacity for future development impossible to estimate.

The arid, almost rainless region now belonging to Germany need not be envied ; the fever-stricken region north of Delagoa Bay need not be grudged to Portugal, seeing that we now have within the sphere of British influence the high central *tableland*, which forms a healthy line of access to the mountain

and lakes, whence arise the Zambesi, the Congo, and the Nile.

The future development of "Congo Free State," and the East African Lakes Company, will be stimulated by the approach of a railway to the Victoria Falls of the Zambesi. The country, 800 miles in length, between Kimberley and the Falls, has an average elevation of 4,000 feet, and for the most part is not unhealthy. Those who are willing to follow Stanley's clearly laid down laws as regards place of bivouac, conditions of exposure to wind, &c., may, without great risk, explore and settle in the upper reaches of the Congo and the Nile. The terrible fatality that has fallen upon our pioneers who have approached the tablelands of the interior from the mouth of the Congo or of the Zambesi, is due to the pestilential nature of the swamps and low sea-coast levels. When Equatorial Africa is reached without passing through these fever-stricken regions, it will be robbed of half its dangers.

Had time permitted, I might have enumerated some of the classes of disease for which the South African climate may prove of special benefit. It only remains for me to apologise for having taken you over so much arid ground. If you have found the subject a dry one, I may remind you that this dryness is in harmony with the nature of the Great Karoo district, which determines the character of "South Africa as a Health Resort."

Note.—In the discussion that followed the reading of the Paper, at the Royal Colonial Institute, much corroborative evidence was adduced by Lieut.-Col. Sir Charles Mitchell, K.C.M.G.; Mr. L. A. Vintcent, M.L.A. (Cape Colony); Mr. John Mackenzie (Bechuanaland); Mr. Stanley Leighton, M.P.; Sir Donald Currie, K.C.M.G., M.P.; Mr. Walter Peace; Dr. J. A. Ross (Cape Colony); Major-General J. Dunne; Mr. Arnold White; Mr. Morton Green; Sir Charles Mills, K.C.M.G., C.B.; and the Chairman, Sir Henry Barkly, G.C.M.G., K.C.B.

The record of the discussion is to be found in Volume XX. of the Report of the Proceedings of the Royal Colonial Institute for 1888-89.

TABLE

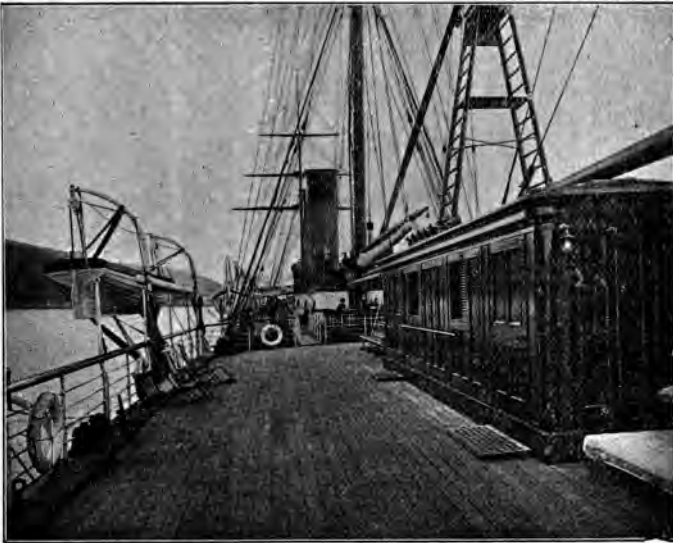
SHOWING ELEVATION AND RAINFALL IN SOUTH AFRICA.

	Elevation in feet.	Annual Rainfall in inches.	Annual Num- ber of Days of Rain.
Aliwal North	4,343	18-36	61
Beaufort West	2,792	7-91	25
Bishop's Court (near Cape Town)	250	56-65	102
Bloemfontein	4,540	16-97	70
Burghersdorp	4,552	11-39	41
Calvinia	3,100	4-28	28
Cape Town	15	23-72	70
Ceres	1,493	23-18	67
Colesberg	4,407	12-59	33
Cradock	2,855	9-18	45
De Aar	4,180	19-06	60
Dordrecht	5,200	18-36	61
Fraserberg	4,200	2-92	18
Graaf-Reinet	2,463	9-60	39
Grahamstown	1,800	22-33	84
Johannesburg	5,000	..	...
Kimberley	4,012	20-52	64
King William's Town	1,273	16-48	81
Knysna	30	31-84	93
Kokstad	4,153	22-39	67
Ladybrand	5,000	27-10	87
Maritzburg	2,197	31-87	141
Middelburg	2,197	11-38	39
Pella	1,800	0-85	3
Port Elizabeth	181	19-71	84
Pretoria	4,007	30-74	64
Queenstown	3,548	16-70	76
Richmond	4,736	10-53	33
Simon's Town	20	36-02	110
Table Mountain	3,349	65-66	...
Tarkastad	4,280	8-85	55
Worcester	794	7-51	39
Wynberg	164	43-40	94

V.—THE VOYAGE.

A FLEET of fifteen powerful steamers of the Castle Line is at present engaged in keeping up regular communication between this country and South Africa, and four additional steamers are employed on the South African Intercolonial Service. The mail steamers vary in tonnage from 3,700 to 5,500 tons. They are all provided with triple expansion engines, making the passage to the Cape in from 16 to 19 days. In addition to being lighted throughout by electricity and provided with electric bells and the latest sanitary and other improvements, including cold air refrigerators for storing fresh provisions, the steamers are amply provided with water-tight bulkheads and other appliances for minimizing risk in case of accident. A surgeon and stewardess, whose services are rendered without charge to passengers, are carried by each steamship.

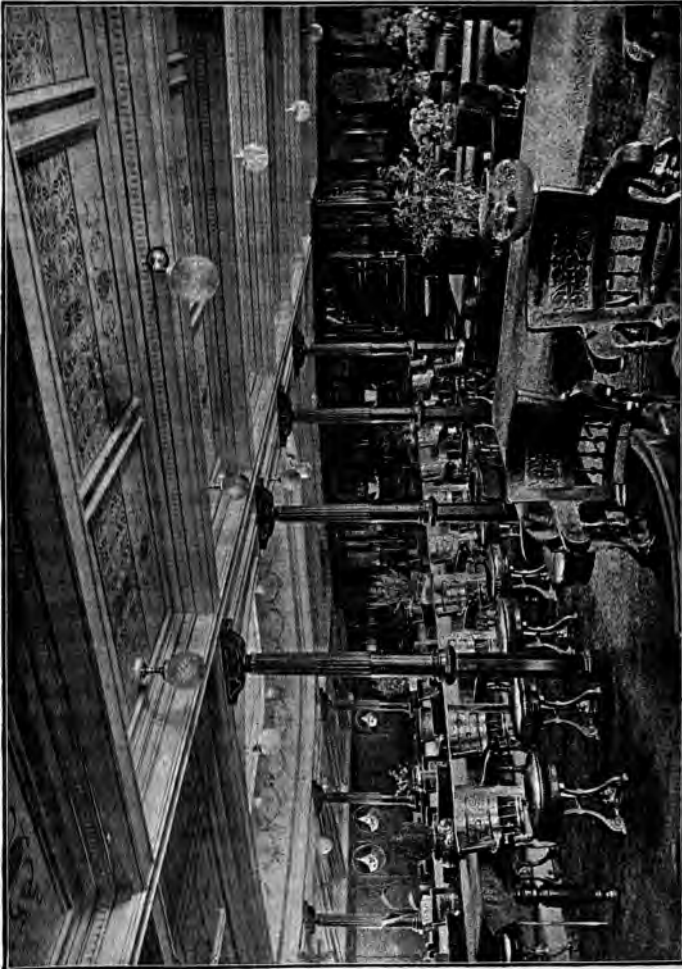
The nature of the passenger accommodation may be best understood from the following short description of the arrangements in the R. M. S. "Dunottar Castle":—



QUARTER DECK—PROMENADE.

The First Class Dining Saloon, which extends across the full width of the ship, is panelled in dark mahogany, relieved

with satin-wood. The ceiling is painted ivory white, and is divided into panels, which are enriched with a delicately tinted ornament. Occupying the spaces between the entrance



DINING SALOON.

doors to the saloon are book cases, and on either side of these are arched and panelled recesses. At the other end of the room will be found a piano and organ. The port-holes are effectively arranged in couples, under semi-circular arches, and are draped with old-gold coloured curtains. In the centre of

the ceiling is a large well, surmounted by a cupola of stained glass, and open on three sides to the music room, which is situated above the saloon, while on the fourth side it is screened off from the ladies' boudoir by a beautifully designed bevelled glass window. The saloon will seat about 160 passengers, and is furnished with two large tables, and a number of separate tables for small parties.

The Music Room, on the upper deck and above the saloon, is panelled with different shades of satin-wood. Comfortable



MUSIC ROOM.

lounges and a handsome Broadwood piano are provided. The side windows of this apartment are of stained glass, and some contain views of the old Scotch castle, situated on the Aberdeenshire coast, from which the vessel takes her name, while others display the Arms of Dunottar Castle.

The Ladies' Boudoir is situated next to the music saloon, and is divided from it by the bevelled-glass window already referred to. It also is panelled in satin-wood, and, like the music room, has a richly decorated ceiling. The covering of the furniture is of a very delicate and artistic material.



LADIES' BOUDOIR.

The Smoking Room, which is placed on the upper deck, is finished in oak and walnut and has an oak parquet floor, the ceiling being decorated similarly to the other saloons. In this room are placed comfortable easy-chairs and couches covered with red-brown morocco, with here and there tables for *whist*, etc.

SMOKING ROOM.



STATE ROOM.

The State Rooms are a model of comfort and convenience, being provided with electric light, electric bells, etc., etc. The Bath Rooms contain baths carved out of blocks of solid marble. The floors are laid in mosaic, and a constant supply of hot and cold water is laid on. Sitz baths, warm and cold sprays, and shower baths can be had at will. An interesting feature is a Barber's Shop, fully equipped, and under the superintendence of an experienced hair-dresser. Hair is brushed by electricity.

The Second Class Saloon, which is forward, will seat 100 passengers. It is handsomely fitted up, contains a library, and a piano, and is furnished with revolving chairs, an unusual luxury for second class passengers. The state rooms in this class are very comfortable, being furnished with spring mattresses, sofas, and having the electric light, etc.



SECOND CLASS SALOON.

The Third Class Accommodation is remarkably comfortable, and is far beyond the ordinary style in this class.

leals.

The nature of the meals provided for passengers and the hours at which they are served are as follows:—

In the first class, the meals are—breakfast at half-past eight, luncheon at one, and dinner at half-past six, while at four o'clock those who appreciate the luxury can have afternoon tea.

At the three principal meals there is provided every possible variety of fish, flesh, and fowl, of such excellence as has surprised passengers who were unacquainted with this Line. A separate and suitable table is provided for children.

Each vessel carries a refrigerating chamber, or an icehouse amply supplied with sufficient ice for the voyage.

A cow is taken in order to provide fresh milk.

The meals in the fore-cabin are—breakfast at eight, dinner at one, and a meat tea at five. The food is of the same quality as that provided in the saloon, and the dishes are only slightly less numerous.

In the third class, the food is also of the best quality, and the meals are taken at the same hours as in the fore-cabin. In this class also a free table is provided.

The following is a Bill of Fare chosen at random from the Steward's Book :—

SALOON.

BREAKFAST.	LUNCH.	DINNER.
Porridge.	Soup.	Scotch Broth.
Fried Mackerel.	Lobster and Fresh	Oyster Patties.
Mutton Chops.	Herrings.	Ragout of Duck, Green Peas.
Savoury Omelette.	Anchovy Toast.	Sheep's Trotters au Gratin.
Stewed Tripe.	Rabbit Pies.	Roast Beef, Roast Mutton.
Broiled Bacon.	Cold Mutton.	Corned Beef, Boiled Mutton.
Salt Fish and Egg	Cold Beef.	Ox Tongue, Beef Curry.
Sauce.	Cold Ham.	Braised Partridges.
Curry and Rice.	Tongue.	Boiled Fowl, Parsley Sauce.
Irish Stew.	Corned Beef.	Vegetables.
Potato Chips.	Oxford Brawn.	Ginger Pudding.
Cold Ham and Beef.	Vegetables.	Plum Tart, Pancakes.
Fruit.	Cheese and Salad.	Mince Pies, Jam Roll.
Tea, Coffee, and	Pastry, Buns, and	Oranges, Apples, Pears.
Chocolate.	Scones.	Nuts.
	Fruit.	Tea and Coffee.

SECOND CLASS.

BREAKFAST.	DINNER.	TEA.
Porridge.	Pea Soup.	Cold Meat, Pickles,
Steak and Onions.	Sheep's Head, Brain	Scones.
Stewed Tripe.	Sauce.	Preserves.
Salt Fish, Egg Sauce.	Roast Mutton.	Cheese.
Irish Stew.	Rabbit Pie.	Bread and Butter.
Bread and Butter.	Corned Beef.	Tea and Coffee.
Tea and Coffee.	Potatoes and other	
	Vegetables.	
	Pastry.	
	Bread and Cheese.	

THIRD CLASS.

BREAKFAST.
Porridge.
Hash.
Irish Stew.
Bread and Butter.
Tea and Coffee.

DINNER.
Pea Soup.
Roast Mutton.
Potatoes and other
Vegetables.
Pastry.
Bread and Cheese.

TEA.
Cold Meat and Pickles.
Marmalade.
Bread and Butter.
Tea and Coffee.

Wines, ales, mineral waters and spirits, of which a large and well-selected stock is always carried, are supplied on board at moderate prices. Tobacco and cigars can also be obtained in the same manner.

Ports of
call.

The Mail Steamers are despatched from the East India Dock Basin, Blackwall, London, E., every alternate Friday, and embark the mails at Southampton on the following day (Saturday) for Cape Town, Algoa Bay (Port Elizabeth), East London and Natal, proceeding *viâ* Madeira.

In addition, Intermediate Mail Steamships, carrying the Dutch Royal Mails, and calling at Flushing (Holland), Lisbon, and Las Palmas (Grand Canary), are despatched every alternate Thursday from the East India Dock, London, after visiting Hamburg on the previous Saturday.

There is thus a *regular* weekly service from London to South Africa by the Castle Line.

The Intermediate Steamers also call at Algoa Bay (Port Elizabeth), and East London, as well as Mossel Bay, between Cape Town and Natal, and from the latter port proceed to Delagoa Bay.

Once every eight weeks, the Intermediate Steamers call at St. Helena and take passengers for Ascension, who tranship at the former island; and every four weeks, one of these steamers proceeds beyond Delagoa Bay to Madagascar and Mauritius.

The steamers employed on the Inter-colonial Mail Service carry mails and passengers from Algoa Bay to Natal and back direct, and those employed on the East Coast Service receive goods and passengers by transshipment at Natal, from the Ocean Mail and Intermediate Steamers and visit Delagoa Bay, Inhambane, Beira, Chinde, Quilimane, and Mozambique.

Ports of
departure.

Passengers by the Mail Steamers embark either in London or at Southampton, as is the more convenient to themselves. By the Intermediate Mail Steamers they can embark in London or at Flushing.

The steamers load in London within 200 yards of Blackwall Station, which is the terminus of a short line of railway from

Fenchurch Street Station, in the City ; whence there are trains every twenty minutes throughout the day, accomplishing the journey in about a quarter of an hour. The hour of leaving the docks in London depends upon the tide. Passengers have to be on board, as a rule, on the evening previous to the day of sailing.

The departure from Southampton follows on the arrival of the supplementary mails from London. Passengers should be on board at Southampton by 2 p.m. Those proceeding by rail from London require to leave town at latest by the "Castle Express," which is despatched from Waterloo, each alternate Saturday, at 11.40 a.m., direct for Southampton Docks, where a tender is in waiting to convey them alongside the Mail Steamer.

Light baggage only is carried by this train. All heavy ^{Baggage.} baggage must be shipped on the steamer in London not later than the previous Wednesday. A liberal baggage allowance, freight free, is made to passengers, and full details as to the baggage arrangements are given in the Company's handbooks.

Passengers wishing to join the steamers at Southampton, are ^{Railway} given free railway tickets from Waterloo to that port by the ^{tickets.} "Castle Express," and passengers coming from the West of England, are given free railway tickets from Plymouth to Southampton, for the Mail Steamers, and from Plymouth to London for the Intermediate Steamers.

Homeward passengers landing at Plymouth are similarly given free railway tickets thence to London.

Friends who may be desirous of seeing passengers off from ^{Informa-} Southampton, are granted return tickets between Waterloo ^{tion to} and that Port at reduced rates. ^{friends.}

On receipt of the telegram advising the arrival—all well—of each steamer, intimation will be sent to any friends whom passengers may wish to be informed of their safety, and whose addresses they may leave with Messrs. Donald Currie & Co.

Letters forwarded to Southampton for passengers should be ^{Letters.} addressed to the care of the agents, Smith, Sundius and Co.

The only outfit that a passenger to the Cape really ^{Outfit.} needs is some warm clothing for the Channel and commencement of the voyage, and some of a lighter texture to wear after Madeira is passed. English summer or yachting clothes are perfectly suitable for the latter purpose. Sufficient linen, &c., to last the whole voyage should be taken.

English summer clothing of light texture and colour is also that which is most generally worn in the towns of South Africa, and special clothes need only be provided by those who have

decided to proceed into the interior, where clothing of a material not easily torn is necessary.

A deck chair is a useful luxury. Folding chairs are best suited for the purpose, as they can be carried about easily afterwards. Deck chairs of all kinds are supplied by the Madeira Wicker Company, East India Dock Basin, London, E., who place them on board the Steamship on receiving instructions.

In a question such as outfit, which depends so entirely on individual tastes and habits, it is impossible to give hard and fast rules.

It should be remembered that the seasons in South Africa are nearly reversed as compared with those of England, spring commencing in August, summer in November, and autumn in March, while June and July are usually cool.

The average length of the passages of the Castle Royal Mail Steamships between Southampton and Capetown is about 18 days; and the shortest time in which the voyage has yet been made by these vessels is 16 days 2 hours, by the "Dunottar Castle." The passage occupies to Madeira about three and a-half days; thence to St. Helena, where the intermediate steamships call once every two months, about ten days; and to Capetown the remaining five or six. Ascension is only touched at on the homeward voyage, and passengers from England for that Island tranship at St. Helena.

From Capetown to Algoa Bay is about thirty hours' run, and the voyage from the latter port to Natal occupies about the same time.

The round voyage from England to the Cape or Natal and back in the same vessel occupies about 9 weeks, or to Capetown and back in the first homeward vessel 7 weeks.

The distance from Natal to Mauritius is about 1,600 miles, and occupies about six days; and the through passage from England to Mauritius therefore occupies about 31 days.

From Natal there are fortnightly sailings to Delagoa Bay, thirty hours distant, by the intermediate steamers, and six-weekly, by the East Coast steamers, to Mozambique, a twelve days' passage, calling at Delagoa Bay, Inhambane, four days; Beira, seven days; Chinde, eight days; Quilimane, nine days (approximately) from Natal.

As regards the beneficial effects of the voyage, the experience of Dr. Symes Thompson (see pages 33 and 34 above), is corroborated by Dr. Lennox Browne, who is so kind as to furnish the following notes:—

"With our present knowledge, it is no longer necessary to expatiate on the advantages of a sea voyage, but I have

pleasure in acceding to the request of Sir Donald Currie to say a few words as to the benefit to be derived from a trip to South Africa, and of a sojourn—temporary or permanent—by those of delicate health in that most favoured colony. In the earliest days of my professional career I made a couple of voyages round the world, and so deeply have I ever since been impressed with the value of sea travel, not only for the pulmonary invalid, but for all who need recuperation without fatigue, that I have frequently recommended it. To many, and I am of the number, whose daily work or disposition leaves but little time for real repose, continental travel, with its long railway journeys, frequent change of hotel—constituting an existence which for the time is chiefly occupied in packing and unpacking—is nothing less than a torment, and the end of such a holiday (save the mark) is hailed with a sigh of contentment at the acquirement of rest which ‘home’ only will afford. And so, when a few years ago I found myself again requiring a change, I cast about me where to go. Australia was too far in a sailing ship, and there were many disadvantages, such as the passage by the Red Sea if I went the new route by steam.

“A trip to America I have found too unrestful; there is so much competition to accomplish the passage as rapidly as possible that one is simply in a floating locomotive with none of the pleasures of sea-life, while there is such a crowd of passengers that fresh air, even on the promenade deck is almost a misnomer. So I decided in favour of a voyage to the Cape, which I had heard described as ‘the most delightful in the world.’ The sea is, after a possible—by no means certain—tumble in the Bay of Biscay, one of almost lake like smoothness, the temperature equable, and altogether as I have elsewhere expressed it, the passenger is sailing ‘through summer seas.’ The favourable effect on my own health and happiness was so pronounced that I determined to repeat it, only to find—what is rare—that the second experiment was even more successful than the first. Doubly trained by pursuit of a profession for a quarter of a century, and by devotion for an even longer period to an absorbing art, both of them enforcing and cultivating the habit of observation, I found that in this voyage with the temporary stoppage at Lisbon and Madeira, or—as one may make it in the intermediate ship also at the Canaries—with the sight of Teneriffe and the coast of Africa, and—on return—the calls at Ascension and St. Helena, gave repeated and agreeable variations to the eye and to the mind, and I have no hesitation in recommending

the voyage to those who require change with real rest of body and true recreation of faculties.

"Instead of realizing the cynical definition that a ship is but 'a floating prison with the additional chance of being drowned' those who do likewise will gain new pleasures from sources hitherto unknown to them, and will have a never ending subject for agreeable reflection long after they have returned to the monotony of their daily labours at home.

"South Africa being an English colony of unbounded resources and constant new development they will take an interest in the grand history that is each day accumulating as they may read it in their newspapers. The friendships that they make in passage will be tested by something more than a day's or an hour's conversation as occurs from a continental tour. The voyage indeed forms a good test of a man's character, and if one is intending to reside any time in the colony, it is important to remember that no stronger introduction will be needed than the reputation which may be achieved—or destroyed—during a voyage.

"Many will find that the sea trip to and from South Africa is enough. This can be accomplished—if one returns in the same ship—in barely more than two months, or, by a rest of a few days only in the Cape, in about six weeks. If one goes in the same vessel three weeks are at disposal, which may be occupied advantageously by travelling along the coast from Cape Town, with various stoppages at Mossel Bay, Port Elizabeth and East London, and on to Natal, from all of which points short trips can be made inland, or one can remain in Cape Town and have sufficient time to visit Kimberley and other parts of Cape Colony. Most invalids will, however, require to make a somewhat longer stay, and here it is necessary to note that in so large a district there are many variations of climate suited to the needs of different individuals.

"Understanding that the excellent compilation, made by Dr. Symes Thompson, of the views of resident doctors as to the value of the various climates afforded in South Africa is included in this little volume, I do not presume to say much at short notice on that subject.

"For my own part I always advise a patient on landing to consult a local physician, and to be examined as to the improvement that may have been gained in the interval of leaving England, and to be guided by his advice as to where they should settle. For instance, I was told by one physician there that a consumptive patient—a bank clerk—did well for some years in Cape Town, but his health then beginning to show signs of deterioration, he was sent with

further advantage to Kimberley, which is situated at a greater elevation; but, again, after a residence of three years there, it was found necessary to go higher, and the patient finally settled in the Transvaal, there to find permanent restoration to health.

"One of the greatest drawbacks to invalids going to South Africa is the poor quality of accommodation of bed and board to those of delicate nurture, and as a step in the right direction it may be mentioned that at Ceres—a delightful Health Resort situated about 80 miles from Capetown, 1,500 feet above the level of the sea, and well suited to invalids in whom disease is not far advanced—a house replete with every comfort has been opened by the widow of an English clergyman assisted by her daughters and supervised by her son, who is a highly qualified physician.

"Imperfect as these few words are and written with but slight preparation, I could not refuse to say something in favour of a voyage and a country to which I was so much indebted for benefits personally received and conferred on numerous patients, in whose name I felt I was empowered to speak as well as my own."

Dr. Robson Roose, who was also a passenger on the steamers of the Castle Mail Packets Company, kindly permits us to state that he places a high reliance on the good effects of a voyage to the Cape and back. Many of his patients have tried it, and the good it has done to overworked business and professional men suffering from sleeplessness, neuralgia and similar complaints, has been marvellous, as it gives the *greatest* amount of nerve restoration in the *smallest* space of time. Persons of gouty habit and delicate chests have also derived much benefit from the voyage. From personal experience, Dr. Robson Roose cannot speak too highly of Madeira as a place for nerve rest. It is quite possible for over-tired persons, only able to take a holiday of three weeks' duration, to obtain marked amelioration of their symptoms by means of the voyage and a sojourn of some few days in this charming island. He also refers, on page 67 of his treatise on "Nerve Prostration and other Functional Disorders of Daily Life" (2nd edition), to the "excellent arrangements for the passengers' comfort on board the steamers" as enhancing the beneficial effects of the voyage. And on page 68, he notices the "variety of diet and excellent cooking" provided on the mail steamers. Diet, &c.

The "Official Handbook of the Cape of Good Hope," above quoted, states that "the voyage to the Cape has justly become famed as one of the most pleasant and enjoyable it is possible

to make, and the great ocean steamers of the Cape lines have become celebrated for their comfort and punctuality."

nuse-
mts.

A traveller who took a voyage recently to the Cape for his health, after pointing out that the voyage beyond Madeira is at all seasons of the year a fair weather one, thus describes the life on board the Castle steamer in which he sailed:—

"When Madeira is passed, the real business or rather fun of the voyage commences. The next morning a committee was elected from among the first class passengers, and I was made the secretary. We set to work to set the ball a rolling, and I can assure you the sphere revolved rapidly the whole time.

"A programme was drawn up and capitably carried out. We had a fancy dress ball, a ship's ball, several Cinderellas, lawn tennis in the mornings, cricket in the afternoons, and certain days given up to athletic sports, the milder amusements of quoits, bowls, chess, whist, and various other pastimes going on concurrently. We had smoking concerts on deck, which the crew as well as all classes of passengers attended; we had grand concerts in the saloon, where more classical music was indulged in. The splendid band of the ship (and this is a luxury the Castle Line provide for their passengers) played on deck every night. Theatricals, Mrs. Jarley's Wax Works, and 'Trial by Jury,' filled in spare moments.

"I will not weary you with a diary of the voyage, suffice it to say that all went as merry as the proverbial marriage bell. One day at sea is very like another, so if I give you a day's log picked at random from my diary, it will give you an idea of the way life is spent on board ship.

'*Thursday, 15th January.*—Up at 7.30. Have some fruit, 'then bath and dress by 8 o'clock. Constitutional till 8.30, 'then breakfast, then smoke and lounge, read, chat, chess, 'quoits, lawn tennis and cricket till 12.45, the bell calling 'us to the sweepstakes interrupting about 10.30. Lunch at '1 p.m. At 2, athletic sports, races, tug of war, cock fights, 'obstacle races and a long varied programme, including events 'for the ladies, such as threading needles and egg and spoon 'races. Dinner 6.30. At 7.30 all went forward to the second 'saloon, and attended Mrs. Jarley's wax works and concert, 'and at 9 all return to the first class saloon to enjoy the fun 'of a 'Trial by Jury,' where several passengers were tried for 'various imaginary offences.'

"And so we go journeying on, sailing pleasantly over the calmest of seas and under the bluest of skies, a gentle breeze refreshing us the whole time. The passengers present now a very different appearance to what they did on embarking. *The invalids are skipping about and look (and feel too, which*

is of more consequence) as if nothing had ever been the matter with them. Business men have shaken off the cobwebs of the city, and the ladies do not require to call in art to bring colour to their cheeks—all are looking the picture of health.

“As day after day passes by, so do we get more and more attached to the ship and our surroundings, and it is with feelings akin to pain that we join the muster on deck to see Table Mountain in the distance. At luncheon on our day of arrival at Cape Town, farewell speeches are the order of the day, and one of our party only echoed the sentiments of us all when he referred, in graceful and grateful terms during the course of his eloquent speech, to the kindness we had received at the hands of our popular Captain, who had done so much to make our voyage such a truly happy one.”

On arrival at Cape Town, the steamers come alongside the quays in dock, and conveyances are obtainable for passengers on landing. Arrival.

At the other principal ports in South Africa passengers are landed in tenders from the steamers, which anchor in the roadsteads.

The hotel accommodation has already been referred to in the foregoing medical reports. It is, however, to be noted that arrangements are in progress for the erection of a first-class hotel at Cape Town and one at Bloemfontein. Hotels.

The foregoing information as to the voyage to South Africa by the Castle Line, can be supplemented by reference to the handbooks for passengers, and other publications, issued by Messrs. Donald Currie and Co., to whom, or to whose agents, applications with regard to fares, &c., should be made. Further information.

A list of the fleet and of the principal agencies is appended, together with the names of some useful guide books.



VI.—SOUTH AFRICAN RAILWAYS.

The communications by railway with the interior have, in late years, been rapidly extended.

is
only.

The three main or trunk systems of Railways in the Cape Colony are called the Western, Midland and Eastern.

The Western Railway, with its starting point in Capetown, and the Midland Railway from Port Elizabeth, are worked as a single trunk system, 839 miles in length, the connection between the two systems being at De Aar, 501 miles from Capetown, and 339 from Port Elizabeth. Through trains are also despatched from both Capetown and Port Elizabeth to Kimberley, the centre of the Diamond Fields, 647 miles from the former, and 485 miles from the latter port, and the line has been extended to Vryburg and is being continued thence through Bechuanaland to Mafeking. On the Western portion of the line, the principal Stations are Durban Road, Paarl, Wellington, Ceres Road, Worcester, Touw's River, Beaufort West and De Aar; there are branch lines to Malmesbury, and to Wynberg, Kalk Bay, and Simonstown, and another, 42 miles in length, from Worcester to Robertson and Roodewal (Kogmans Kloof)—the station for Montagu—which has now been opened for traffic.

The chief stations on the Midland Railway from Port Elizabeth are Alicedale Junction, Cookhouse, Cradock, Middelburg Road and Naauwpoort Junction, whence an extension has been constructed to Bloemfontein, the capital of the Orange Free State, and is being continued to the Vaal River, and thence by Johannesburg to Pretoria, the capital of the Transvaal. Branch lines run to Uitenhage and Graaff-Reinet, Grahamstown and Colesberg. There are means of communication from Bloemfontein to the Gold Fields, &c.

The Eastern system of Railways has East London as its starting point and runs through Fort Jackson, Blaney, Kei Road, Toise River, Queenstown, Sterkstroom, Molteno and Burghersdorp to Aliwal North, 280 miles, with a branch line to King Williamstown. This Line is being extended to join the Midland Railway in the Orange Free State.

There are also Railways belonging to private companies between Port Nolloth and the Cape and Namaqua United Copper Mines, 300 miles in length, and from Port Alfred to Grahamstown 45 miles.

The Natal Railway system consists of a main line, 220 miles ^{Natal.} in length, from Durban through Richmond Road, Pietermaritzburg, Howick, and Ladysmith to Biggarsburg, whence it is being continued by two branches, via Dundee and Newcastle, to the Orange Free State and Transvaal. There are also short lines from the Point, where passengers land, to Durban, a distance of two miles; and from Durban, along the Coast, to Verulam, 19 miles, and Isipingo, 11 miles.

A line, 55 miles in length, has been made from Delagoa Bay ^{Delagoa Bay.} to Komati Poort, and is being continued into the Transvaal towards Barberton and Pretoria.

There is a regular passenger communication by means of mail carts, coaches, and in some cases bullock waggons, between the railway stations and the larger South African towns situated at a distance from the railway lines. ^{Other means of communication.}

APPENDIX.

GUIDE BOOKS, &c.

SOUTH AFRICA.

- SOUTH AFRICA, AND HOW TO REACH IT BY THE CASTLE LINE, 6d. Donald Currie & Co., 3, Fenchurch Street, E.C.
- NAAR ZUID AFRIKA MET DE CASTLE LIJN. Volgens den Engelschen tekst van E. P. Mathers, voor Nederland bewerkt door H. Tiedeman nijgh and van Ditmar, Rotterdam.
- NACH SUD AFRIKA MIT DER CASTLE LINIE, 6d.
- SKETCH OF THE MINING AND OTHER RESOURCES OF THE TRANSVAAL, by W. Y. Campbell (Gratis). Donald Currie & Co.
- OFFICIAL GUIDE TO CAPE COLONY, 1/6. Donald Currie & Co., 3, Fenchurch Street, E.C.
- SOUTH AFRICA, 5/-. S. W. Silver & Co., 67, Cornhill, London.
- OUR COLONY OF NATAL, 3/6, by Walter Peace. E. Stanford, 55, Charing Cross.
- GOLDEN SOUTH AFRICA, OR THE GOLD FIELDS REVISITED, 2/6, by E. P. Mathers, F.R.G.S. Donald Currie & Co., 3, Fenchurch Street, London.
- MATABELELAND AND MASHONALAND, by E. P. Mathers. "South Africa" Offices, Warrford Court, London, E.C.
- THE TRANSVAAL, 2/6. S. W. Silver & Co., 67, Cornhill.
- SIX MONTHS IN CAPE COLONY AND NATAL, by J. J. Aubertin, 6/-. Kegan Paul, Trench & Co., Paternoster Square.
- NOTES ON SOUTH AFRICAN HUNTING, 1887, by A. J. Bethell, 1/-. Whitaker & Co., London.
- MAP OF SOUTH AFRICA (including the Gold Fields and routes), gratis; large size, mounted, 2/2. Donald Currie & Co., 3, Fenchurch Street, London.
- MAPS OF SOUTH AFRICA are also issued by Messrs. Silver and Co., and Mr. Stanford. Most Colonial Newspapers, Almanacs, Directories and other publications of interest can be obtained from Messrs. Street & Co., 30, Cornhill; or Messrs. Juta, Heelis & Co., 9, St. Bride's Avenue, Fleet Street, E.C.

MADEIRA.

YATE JOHNSON'S MADEIRA, 10/6. Dulau & Co., 37, Soho Square.

MADEIRA : ITS SCENERY, AND HOW TO SEE IT, 7/6, by Miss Taylor. E. Stanford, Charing Cross.

HANDBOOK OF MADEIRA, 1/6, by J. M. Rendell. C. Kegan Paul & Co., 1, Paternoster Square.

MADÈRE ÉTUDIÉE COMME STATION D'HIVER ET D'ÉTÉ, par le Dr. Julius Goldschmidt, 2/-. Delahaye, Paris, and Donald Currie & Co., 3, Fenchurch Street, London.

MADEIRA AND THE CANARY ISLANDS, 2/6. A. Samler Brown. Sampson Low, Marston, Searle and Rivington, Ltd., Fetter Lane, E.C.

MADEIRA : MITTEMAIER UND GOLDSCHMIDT, 6/-. Vogel, Leipsig.

MADÈRE, STATION MÉDICALE FIXE, par le Dr. C. A. Mowiaõ Pitta. Felix Alcan, Paris.

HANDBUCH FÜR MADEIRA, von Prof. Dr. Langenhaus, 8/-. A. Hirschwald, Berlin.

MADÈRE, PAR M. W. MARQUIS DEGLI ALBIZZI, 4/-. Orell Tussli & Co., ZURICH.

THE CANARY ISLANDS.

NOTES OF TRAVEL IN THE ISLANDS OF TENERIFFE AND GRAND CANARY. By I. Latymer, 1/-. *Western Daily Mercury Office*, Plymouth.

THE ENGLISH IN THE CANARY ISLES. By Miss Frances Latymer, 4/-. Simpkin, Marshall & Co., London.

THE CANARIES FOR CONSUMPTIVES. E. Paget Thurstan, M.D. W. H. Allen & Co., 13, Waterloo Place, S.W.

RIDES AND STUDIES IN THE CANARY ISLES. Charles Edwards. T. Fisher Unwin, 26, Paternoster Square.



LIST OF THE FLEET
OF THE
CASTLE MAIL PACKETS COMPANY, LIMITED.

OCEAN SERVICE.

		TONS.			COMMANDER.
DUNOTTAR CASTLE	...	5,500	...	...	M. P. Webster.
ROSLIN CASTLE	...	4,350	...	...	J. C. Robinson.
NORHAM CASTLE	...	4,300	...	...	John Winchester.
HAWARDEN CASTLE	...	4,300	...	...	R. Duncan.
PEMBROKE CASTLE...	...	3,950	...	...	H. Rigby.
DOUNE CASTLE	...	3,800	...	...	R. H. Harris, R.N.R.
LISMORE CASTLE	...	3,800	...	...	G. Le Sueur.
DRUMMOND CASTLE	...	3,705	...	...	J. D. Jeffries, R.N.R.
GARTH CASTLE	...	3,705	...	...	H. H. Broadfoot.
GRANTULLY CASTLE	...	3,489	...	...	W. Hay.
CONWAY CASTLE	...	2,966	...	...	Wm. Warden.
WARWICK CASTLE...	...	2,957	...	...	J. W. Creaghe.
DUNROBIN CASTLE...	...	2,811	...	...	R. Winder.
DUNBAR CASTLE	...	2,700	...	...	A. T. Andrews.
METHVEN CASTLE...	...	2,700	...	...	R. Rendall.

INTER-COLONIAL SERVICE.

COURLAND	...	...	1,241	...	...	G. Jaffray.
DUNKELD	1,158	
MELROSE	840	J. Rose.
VENICE	511	D. Wallace.

MANAGERS :—

DONALD CURRIE & CO.
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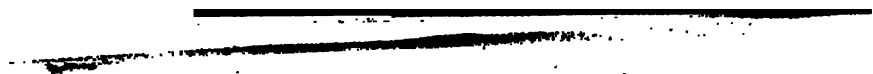
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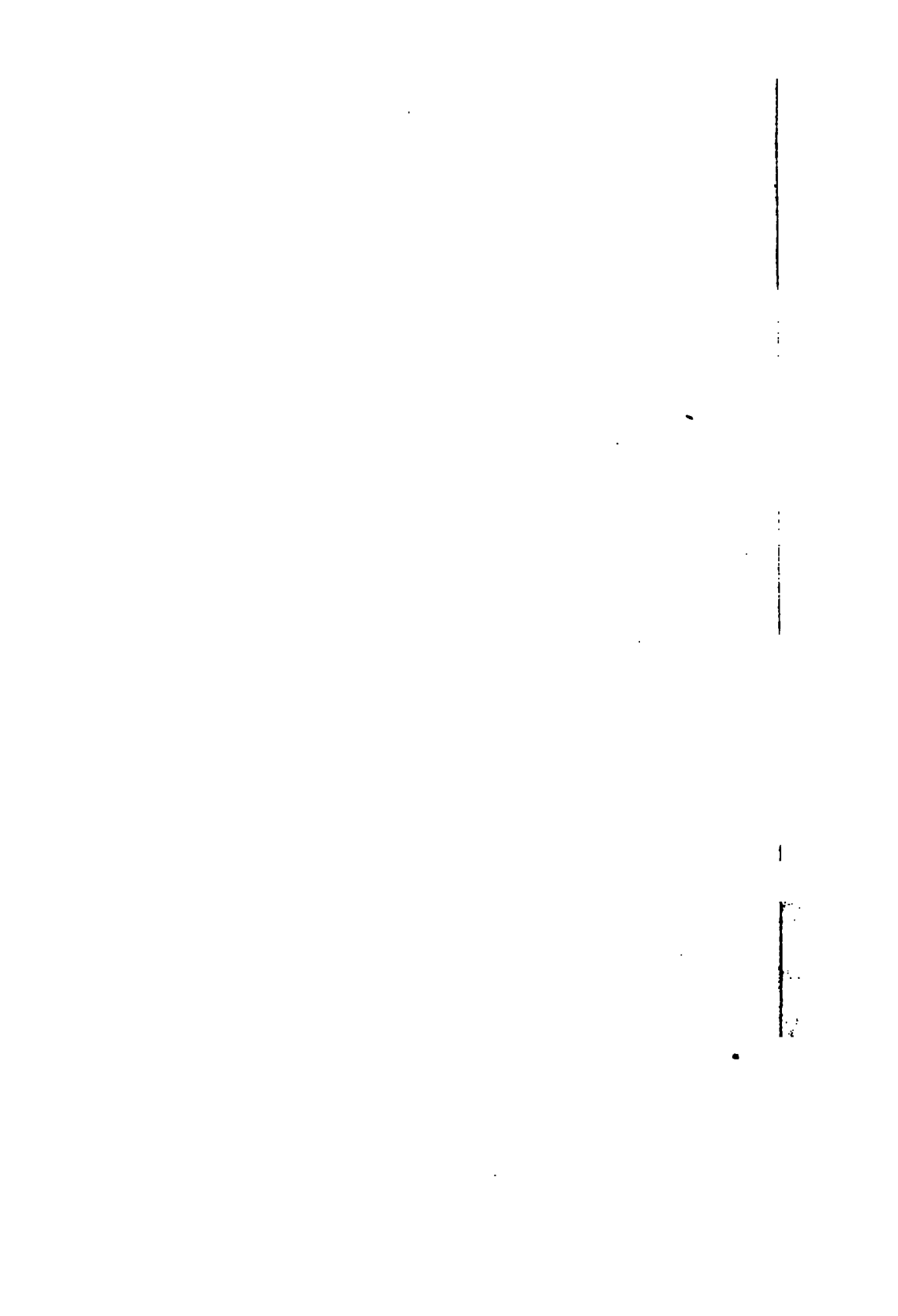
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